Who will and who won't? Factors influencing the uptake of learning facilitation a mixed methods study

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Who will and who won't?

Factors influencing the Uptake of Learning Facilitation

A Mixed Methods Study

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A thesis submitted in partial fulfillment of the requirements for the degree of Doctorate in Education, King's College London

Abstract

Educational reforms for training, based on constructivism, require trainers to become learning facilitators. Within this paradigm, the role of the educator changes: Learning facilitators are supposed to be more process- and student-oriented, reducing the role of the knowledge provider and giving more space for self-organised learning (Neville, 1999). The present study investigated the factors and motivations that contribute to trainers' adoption of educational changes. The study was undertaken in the context of the German Social Accident Insurance (DGUV), in which two yearlong training courses have been restructured based on constructivism.

The study has a sequential, two-part, mixed-methods design. In the first part, 62 trainers who had participated in a course on learning facilitation completed an online questionnaire. Questions were related to their motivations for participation, attitudes and intention to implement learning facilitation in their seminars. As many of those who had responded to the online questionnaire were in favour of the approach, semi-structured interviews with six trainers critical of the change process were carried out subsequently in order to generate a more complete picture.

The results showed that the trainers' attitudes towards the educational reform strongly predict adoption and that adoption is not uniform. Three implementer types with different motivational profiles were identified from the questionnaire data: intrinsic implementers, extrinsic implementers and non-implementers. The interview converged with the results of the questionnaire as some of the interviewees corresponded well with the motivational categories found, although, in this part, a further non-implementing type of trainer also emerged.

The findings of the two parts of the study are integrated, suggesting ways in which training motivation and attitudes influence the adoption versus non-adoption of learning facilitation. In addition, suggestions of how to integrate those who are critical into educational reform processes are made. Finally, potential implications useful for the consideration of educational organisations planning to implement similar educational changes are put forward.

Acknowledgements

A doctoral thesis is a long journey. It bears one name on its title - yet, like in a film, there are many people involved behind the scenes.

For this doctoral thesis, I would to thank the people behind the scenes, on stage and in the director's post, who have made its final release possible.

First of all, I would like to thank my supervisor, Dr. Jill Hohenstein for her incredible patience, thoughtful guidance, academic support and foresight during all these years. I also want to thank Professor Sharon Gewirtz for her support and valuable comments on the first draft of the thesis.

I would also like to thank the Institute of Work and Health of the DGUV in whose context the study was based. In particular, I would like to thank Prof. Dirk Windemuth, Dr. Thomas Kohstall, Dr. Christian Bochmann and Dr. Ulrike Bollmann for their institutional, moral and personal support. Also, I thank Jutta Jähnichen for her patience and help with technicalities of the online questionnaire programme.

Thirdly, I would like to thank Dr. Nicole Stab for her very valuable comments on the quantitative section of the study. I would like to thank Isabell Kempf, for years of believing, motivation and encouragement as well my husband Victor for having been with me on this long journey. I also want to thank my son Leopold who has seen less of his mom at times than he would have liked to.

Finally, I would like to thank my parents for their unconditional support during all this time.

Dresden, September 1st, 2018

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List of Acronyms

Acronym	German meaning	English translation
BG	Berufsgenossenschaft	Statutory Accident Insurance (commercial/industrial sectors)
BT	Basisqualifizierung für Lernbegleiter	Basic Training for learning facilitators
CPD	Berufliche Fort- und Weiterbildung	Continuous professional development
DGUV	Deutsche Gesetzliche Unfallversicherung	German Social Accident Insurance
EMD	Ermöglichungsdidaktik	Enabling Didactics (version of constructivism based on Rolf Arnold).
IAG	Institut für Arbeit und Gesundheit (der DGUV)	Institute of Work and Health (of the German Social Accident Insurance)
KOSIG	KompetenzBildung für Sicherheit und Gesundheitsschutz	Competence education for occupational health and safety (constructivist didactical approach of the DGUV)
OECD	Organisation für wirtschaftliche Zusammenarbeit und Entwicklung	Organization for Economic Co-operation and Development
OSH	Sicherheit und Gesundheit bei der Arbeit	Occupational Safety and Health
SGB VII	Sozialgesetzbuch VII	German Social Code VII
UK	Unfallkasse	Statutory Accident Insurance (public sector)

Chapter 1: Introduction

This study deals with the change processes involved in implementing innovation in educational organisations. The focus is on how an educational change in the direction of constructivism affects the educators involved. The study is set in the context of the German Social Accident Insurance (DGUV), where I work as an employee in the training department[1]. The educators investigated in this study are trainers who teach occupational health and safety (OSH) training courses. In this first chapter, the institutional background and the rationale for the educational change in the organisation are presented. Also, the research gap and the concrete research questions that guide this study are presented.

1.1. Institutional background

The German social security system consists of five pillars: unemployment insurance, pension insurance, health insurance, nursing care insurance and social accident insurance. In general, the Social Accident Insurance (DGUV) is less well known to the public than the other four pillars as only the employer pays contributions to it. Contributions are obligatory, and there is no private system to insure against accidents.

The tasks of the German Social Accident Insurance are laid out in the German Social Code. It specifies that education and training are a central part of the insurance's prevention activities. It states:

> The German Social Accident Insurance institutions are required to provide the necessary initial and further training of people, such as OSH specialists and OSH officers (…). This training is to ensure that these people receive the knowledge, competences and skills which are needed to effectively deal with issues related to safety and health. (SGB VII, § 23)

Training is provided by the DGUV itself as well as by its member institutions - the statutory accident insurances (BGs) and the public-sector accident insurers (UKs). The DGUV is the umbrella association, which represents the joint political interests of

[1] The implications of being at the same time an employee and a researcher in the organization studied will be discussed in more detail section 3.3.7.2.1.

their members. In addition, it provides services that are of interest to all statutory accident insurances, such as training, research and consultancy. In the area of training, the DGUV 'supports its members by developing programs of qualification from the conceptualisation phase to further training' (DGUV, 2018e). Within this scope falls, for instance, the reorientation of the initial training of labour inspectors and safety officers towards a more constructivist approach – the educational change process researched in this study.

1.1.1. Training. The German Social Accident Insurance institutions are among the largest non-state providers of training and education in the country. Whereas the individual statutory accident insurances provide sector-specific training at the company level, the umbrella organisation provides training for the employees of its member organisations. These comprise, among others, labour inspectors, occupational physicians, safety officers, managers as well as trainers in occupational health and safety.

1.1.2. The educational reform in the DGUV. DGUV's training philosophy promotes a competence development approach. Its focus is on active and self-directed learning. The educational philosophy is sometimes referred to as KoSiG: competence education for safety and health (KompetenzBildung für Sicherheit und Gesundheitsschutz, DGUV, 2018d), a concept developed within the DGUV to apply a constructivist orientation to teaching in the field of occupational health and safety. The reason for choosing constructivism also lay in the professional profiles of labour inspectors and safety officers, which have changed in recent years. Tasks of labour inspectors, for instance, have changed from inspecting to consulting and advising companies. Consequently, more social and communication skills are required in their daily work.

The old curriculum for labour inspectors was primarily knowledge-based and did not include much space for skill acquisition. The restructuring of the safety officers' course was based on the same rationale - to promote the acquisition of knowledge and skills for the future working context (Trimpop et al., 2008). With a change towards a constructivist curriculum, more skill-related outcomes were intended to be attained. Interlinking workplace requirements, course structure and learners' needs was expected to help OSH professionals develop the necessary competences for their future jobs.

The constructivist approach adopted by the organisation was ‘enabling didactics’ (Ermöglichungsdidaktik, Arnold, 2003, 2006a, 2008). This specific form of constructivism was chosen because Arnold is one of the few professors of education in Germany who combines research on constructivism with a focus on adult education. More details on enabling didactics and constructivism will be provided in the literature review in chapter two.

The organisation created two working groups for restructuring the training courses, one for the labour inspectors’ and one for the safety officers’ training. The groups comprised representatives of different statutory accident insurances, labour inspectors as well as educational experts. The educational experts had the task of supporting the constructivist orientation of the courses. The task of the working groups was to develop a commonly agreed upon course structure based on constructivist principles for labour inspectors and safety officers, respectively.

1.1.3. Organisational measures to promote the change. The constructivist change required not only a change of curriculum but also a change in the trainers teaching these courses. Within constructivist-oriented courses, rather than imparting knowledge, educators are to take on the role of procedural guides, sometimes called coaches (Ketelaar et al., 2012) or learning facilitators (Arnold, 2006b; Arnold & Schüßler, 2003; Neville, 1991). The concept of a learning facilitator will be reviewed in greater detail below.

To promote the educational change process among trainers and prepare them for the change, different information and training measures were offered. Informative sessions with representatives of the constructivist approach took place with the aim of explaining the rationale for the change. In addition, conferences and workshops on the topic were held by the DGUV and the different statutory accident insurances. The main training measure within the constructivist reorientation was the ‘basic course for learning facilitators’. Its aim was to familiarise trainers who teach at DGUV with the approach and support them become more constructivist-oriented trainers. As the turn towards learning facilitation was a declared organisational aim, the course was obligatory for all trainers.

As the basic course was the key training measure of the organizational change, it will be described in detail in the next section.

1.1.4. Basic training course for learning facilitators. The outline of the basic training course was developed by DGUV's training committee. It was taught by an experienced team of external trainers, one of whom had been involved in the development of the course. The training lasted four days from Monday to Friday. Its main contents were the rationale for the educational change, backgrounds of constructivism, and a set of methods based on systemic-constructivist ideas. The training methods were presented on cards in a toolbox, which was given to all seminar participants to keep and work with. In the seminar itself, much time was dedicated to trying out these new methods and reflecting upon their use in different seminar contexts. In the evenings of the basic training, individual or small group sessions were offered. Here, seminar participants could revise and modify existing seminar concepts with the support of the trainers to make them more 'constructivist'. To accompany the implementation process, telephone coaching was offered after the seminar.

1.2. Trainers in occupational health and safety

As this study is concerned with the factors that influence trainers to take up learning facilitation, it is important to know who the trainers at the centre of this study are. Traditionally, trainers in occupational safety and health teach topics like construction safety, personal protective devices, safety and health regulations and norms, hazardous substances and risk assessment, to give a few examples. Until about ten years ago, the typical trainer used to be an engineer or a natural scientist, often with an additional qualification as a safety engineer, safety officer or labour inspector. Labour inspectors have mandatory rights, that is, they have the power to close a factory if there is an acute safety risk for the people working there. They also investigate severe and lethal accidents and can raise the annual contributions to the social accident insurance of the firms, if necessary. Due to their mandatory rights, what labour inspectors say with respect to occupational health and safety has to be followed in the firms.

Consequently, their professional self-concept was not so much of a trainer as of an expert OSH professional with teaching duties. Teaching skills were normally learnt on the job and trainers followed the teaching styles they had experienced at school and university. Most labour inspectors and safety officers were male. As teaching was only one of their professional duties, hardly anyone taught more than 30% of their working time.

Around the year 2000, more and more psychological topics emerged in occupational health and safety, such as stress, bullying and psychological traumatisation at the workplace. With the rise of these topics, more occupational psychologists joined the DGUV. In addition, DGUV's training institutions increasingly employed pedagogical experts to run their training centres and occupy management positions. To date, staff with training obligations are more diverse, although there are still more men than women giving seminars. In addition to DGUV staff, teaching is also provided by external trainers who cover the parts of the training courses that cannot be covered internally.

To conclude, the study is situated in an organisational context that used to be rather bureaucratic, male dominated and rather slow to change. As an accident insurance, topics of prevention, safety and security prevail. For a long time, training philosophy was based predominantly on a knowledge transmission approach. However, within the last years, changes have taken place, including the introduction of new topics as well as innovative forms of training and teaching.

1.3. Research questions

Many studies investigate educational change processes (e.g., Ellsworth, 2000; Fullan, 1993, 1999; Fullan & Stiegelbauer, 1991). The investigated changes are normally set within educational institutions such as schools and, to a much lesser degree, universities. Schools have teaching and learning as their primary goals. People who choose teaching as a profession know that one of their main tasks will be to teach. In addition, although various motivations for becoming a teacher have been reported (Jungert, Alm, & Thornberg, 2014; Tang, Cheng, & Cheng, 2014), it can be assumed that teachers choose their profession at least in part because they are motivated by the idea of teaching (Jungert et al., 2014). OSH trainers, however, are different in that their job selection is, presumably, not primarily motivated by the idea of teaching. Therefore, the motivational starting point with which teachers and OSH trainers come to teach can be assumed to be different.

Similarly, the organisational context in which this study is set is different from the classical contexts researched in educational change processes. Curricular changes based on constructivism are usually studied at the school level, either nationally (Ketelaar et al., 2012a), regionally (Struyven & De Meyst, 2010) or within individual teacher training initiatives (Brody & Hadar, 2011, 2015; Rienties, 2013). Here, the

educational change is situated in an institution with various hierarchical levels of management and training centres all over the country. In addition, although training is an important task of the organisation, it is not its primary task.

Thus, the institutional setting as well as the trainers are different from those normally investigated in educational change processes. It will be hypothesised that the principal mechanisms related to taking up or resisting an educational innovation at the trainer level are similar to those reported in the teacher literature. However, as the organisational setting combines aspects of an educational institution with those of organisations researched in the management literature, this study will also draw on literature from organisational change processes investigated in management research. Combining these two strands of research is not new, as can be seen from studies investigating teacher change from the lens of Roger's (1965) innovation diffusion theory (e.g., Jermier, Knights, & Nord, 1996; Piderit, 2000). However, with respect to models of teacher change, the incorporation of insights from management research has been observed less frequently. As this may be fruitful and as this study is located at the crossroads of the two disciplines, an attempt towards integration will be made.

In addition, research on trainers who work in occupational health and safety is scarce. Apart from studies related to the OSH trainers' requirement profiles and teaching standards (Bollmann & Windemuth, 2011; Kici, 2010; Koch et al., 2006), hardly any studies on this group of educators exist. Considering the scope of DGUV's training activities and the relevance of trainings related to safe and healthy work places, gathering more insight about what motivates these trainers to take up an educational change may be helpful in strengthening the educational activities at stake.

The present study aims to explore the factors that motivate OSH trainers to take up learning facilitation. As taking up a new teaching orientation is often related to changing one's attitude towards the required change, attitudes towards the educational change will also be investigated. Finally, as for the successful implementation of an educational innovation an understanding of those who do not accept it is vital, the reasons for resistance will also be explored.

In line with the above-mentioned considerations, the research questions for this investigation are:

- What motivates the uptake or non-uptake of learning facilitation?
- What makes trainers change their attitudes over time?
- What are the reasons for resistance?

1.4. Structure of the thesis

After this introductory chapter, chapter 2 reviews the literature relevant to answering the research questions. Chapter 3 deals with the methodology of the study and explains why a mixed methods approach was chosen. In chapter 4, the results of the questionnaire data analysis will be presented, chapter 5 presents the discussion of the questionnaire data. Chapter 6 looks at the results of the interview part and integrates these with those of the questionnaire part of the study. Finally, in chapter 7, the broader conclusions and implications of the study as a whole are discussed.

Chapter 2: Literature Review

2.1. Structure of the literature review

The literature review has three parts. Research on constructivism will be looked at first. Subsequently, factors known to influence the uptake of educational innovations will be reviewed. The last section deals with resistance to educational change processes.

2.2. Constructivism as epistemology

Constructivism as a philosophy is concerned with how knowledge about the world can be obtained. It holds that the world cannot be directly perceived but is constructed by the observer (von Glasersfeld, 1996). Constructivists base their theories on the writings of Piaget (1974) who held that 'the cognitive structures, that we call "knowledge", are not to be understood as a copy of reality, but as a result of adaptation' (p. 73). Studies in neuroscience seem to confirm the view that there is no direct access to a reality independent of our construction of it (Quartz, 1999). Whatever is perceived or known about the world is the product of an interaction between the outside world and pre-existing knowledge structures (Arnold, 1996; Siebert, 2010). The 'same' outside event will produce different effects in different people due to their different pre-existing knowledge structures. This conception of knowledge construction has implications for teaching and learning. Therefore, a constructivist theory of learning evolved on the basis of constructivist epistemology.

2.2.1. Constructivism as a theory about learning. In the interaction between the outside world and the knowledge structure of a person, knowledge is actively constructed. Therefore, there is no one-to-one correspondence of what has been taught to what has been learned, no one-to-one correspondence between teaching and learning. Arnold calls this the 'paradoxical inconsistency', typical of classical learning settings, in which 'externally regulated knowledge acquisition is supposed to lead to self-controlled knowledge application' (Arnold, 2002, p. 26).

The constructivist conception of learning has implications for educators, course design and teaching methods. As all learners learn differently, learning situations should enable learners to actively construct knowledge rather than receive a uniform input. Consequently, according to constructivism, learners learn best in conditions that support them in the process of active knowledge construction (Renkl, 2015; Schellhammer, 2017). Along the same lines, constructivist course rooms operate as learning

environments that allow active construction of knowledge (Baviskar, Hartle, & Whitney, 2009). Finally, as knowledge construction works best when what is learnt is meaningful for the learner, meaningful and context-based learning is preferred over conditions in which the context of applicability is not clear.

Constructivism also changes the role of the educator. As constructivism requires more autonomous and self-organised learning, the educator changes from the knowledge providing expert to a learning facilitator who supports the leaners in their self-organised learning processes (Arnold, 2003; Knowles, 1980; Mezirow, 1997).

2.2.2. Why is constructivism thought to be superior? If an entire curriculum is modified, there must be convincing reasons for adopting this new teaching paradigm. In the case of the DGUV, the rationale behind the change was that constructivism was thought to be more suited to develop the competences and skills required of future labour inspectors. In fact, constructivist curricula have been shown to bring about deeper learning than more traditional approaches. For instance, Christianson and Fisher (2010) found that students learned more deeply about biological phenomena in a constructivist curriculum as opposed to a traditional one. Similarly, Yuen and Hau (2006) showed that students in a constructivist educational psychology course were better at 'recalling, critiquing and generating with the knowledge gained' (p. 1) compared to students in a more teacher-centred group. The authors explain the finding by saying that the material was processed more deeply and that the 'similarity between the situations of knowledge construction and knowledge application' helped to foster deeper level learning as well as competence development. Finally, a meta-analysis on self-regulated learning (Dignath, Büttner, & Langfeld, 2008) found that self-regulated learning strategies, which are often associated with constructivism, were effective even at primary school level.

In addition to bringing about deeper learning, constructivism has been found to be more suited to developing the competencies and skills needed for practical application (Ketelaar, 2012a; Yuen & Hau, 2006). Strobel and van Barnefeld (2009), in a metaanalysis on problem-based learning, which stresses the value of active construction of knowledge through group discussion, found that the 'approach was superior with respect to long-term retention and skill development whereas traditional approaches were more effective for short-term retention' (p. 44). In the context of occupational health and safety, Schreiber-Costa (2018) showed that an addiction

prevention training based on constructivist principles had more lasting effects three months after the training than an instructivist training. Empirical evidence, therefore, seems to support the idea that constructivism is superior to traditional teaching approaches, as it leads to deeper level learning and processing. In addition, skill and competence development are more successfully brought about as meaningful and complex tasks, often similar to the conditions of applicability, are already dealt with during the learning process.

2.2.3. Critical views of constructivism. However, not all see constructivism as favourably as described above. In fact, constructivism has been criticised on various grounds. Here, five criticisms addressing 'instrumentalism', 'not suited for all learners', 'cognitive overload', more guidance needed' and 'sub-optimal implementation in practice' will be reviewed.

A first criticism of constructivism stems from educational sociology. Wheelahan (2009) states that focusing strongly on authentic learning, constructivism only leads to instrumental knowledge and does not produce theoretical and transferable knowledge. As a consequence, learners are excluded from the 'knowledge needed to critically question practice' (Van Bommel, Kwakman, & Boszhuizen, 2012, p. 533). Constructivism, in this view, is seen as an ally of 'new vocationalism', leading to instrumental 'how-to' knowledge that precludes an all-compassing, deep theoretical comprehension which is necessary for full participation in society.

A recent study (Van Bommel et al., 2012) empirically researched the relationship between constructivism and instrumental knowledge. Investigating a group of social work students, which were subdivided into high level, high/medium level, medium level and low-level students, the authors found that only the high and medium/high level students benefitted from a constructivist setting. Students who were highly intrinsically motivated to learn, also acquired deep-level theoretical knowledge. The medium to low-level students, however, only learned what was practically relevant to that specific learning setting, confirming Wheelahan' s view that constructivism only produced instrumental learning. It appears, therefore, that the criticism regarding instrumental knowledge is not generally true, but might be so for already underprivileged or not well-motivated learners.

Therefore, Van Bommel´ s et al. (2012) study supports a second criticism often voiced against constructivism, i. e. that it is not a suitable approach for all learners.

Rowe (2006) for example found that constructivism leads to less learning in a group of students with learning difficulties, Bae (2004) report similar results for children with migration backgrounds. Also, Arnold, Gomez-Tutor and Kammerer (2003) found that adult learners not used to self-directed learning had difficulties with a constructivist curriculum and Sweller (1988) showed that novices, when compared to experts, did not profit much from a constructivist setting. These findings seem to corroborate that vulnerable learners may, in fact, not profit much from constructivist curricula.

Sweller (1988) explained his findings with differences in the capacity of working memory. According to him, all problem-solving tasks make demands on working memory for completion. If cognitive load is too heavy, the tasks cannot be completed well. Novices, for example, need more processing capacity than experts do. Similarly, some older people, children or people with lower socio-economic status (Hackman & Farah, 2009) also often experience higher demands on their cognitive resources. Constructivist learning environments, being 'authentic' and therefore sometimes ill-structured, may make high demands on concentration and cognitive load by diverting attention away from the central learning task. Consequently, they may overburden some learners, leading to less positive results than could be achieved with more guided and more structured learning settings (Kirschner, Sweller & Clark, 2006).

To what extent constructivist learning environments leave learners alone with unstructured learning tasks or also comprise guidance by teachers has been an issue of debate. Mayer (2004) for instance found that the supposedly constructivist teaching method of 'pure discovery' did not work well; but that guided discovery was more helpful to learners. Kirschner, Sweller, & Clark (2006) also report that minimally guided teaching techniques did not produce favourable results but led to cognitive overload (see above). Hmelo-Silver, Duncan & Chinn (2007), however, state that constructivism does not imply 'minimally guided teaching but involves teachers or facilitators who 'play a significant role in scaffolding mindful and productive engagement with the tasks, tools and peers' (p. 101).

Thus, there seems to be agreement about the benefits of scaffolding tasks and of initially guiding and supporting learners, but not about whether or not this qualifies as constructivism. This confusion is not only found in academic debates but also among educators. Often, they are not sure what qualifies as constructivist teaching method within a curriculum. This confusion and the resulting misconceptions may lead to sub-

optimal implementation in practice (Renkl, 2015a). Resuming this criticism nicely, Van Bommel et al. (2012) hold that constructivism makes an ‘unfeasible demand on the average teacher’ (p. 535).

One example of a possible misconception is known as the ‘constructivist teaching fallacy’ (Mayer, 2004). The fact that constructivism conceptualizes learning as an active construction process has led educators to misunderstand that learners have to be constantly visibly active in a constructivist learning setting (Renkl, 2015a). That students can be actively but not visibly constructing knowledge, for example when sitting still and following a lecture or information presented in class, may not have been understood[2]. Coupled with the above mentioned idea of ‘unguided discovery’, this misconception can lead to situations in which visibly active students work in groups with no clear guidance, struggling to find their own solutions to an ill-structured task. Such an experience is frustrating for educators and learners alike and will most probably not lead to quality learning. When implemented in such a way, it is not surprising that researchers such as Slezak (2010) classify constructivism as an ‘example of a fashionable but thoroughly problematic doctrine that can have little benefit for practical pedagogy or teacher education’ (Slezak, 2010, p. 109).

To conclude, it appears that constructivism, if understood and implemented well, can lead to deeper level and more sustainable learning. It appears to be particularly well-suited for motivated learners and those that are used to self-organize their learning. To what extent more vulnerable leaners need more structured approaches is an open question. Offering a more structured approach to them may, in the end, also be constructivist, as it takes the actual knowledge structures of the learners seriously.

2.2.4. Role of the learning facilitator. In line with the changes towards more self-directed and autonomous learning, the role of the educators changes in the constructivist paradigm (Arnold, 2011; Neville, 1998). Arnold et al. (2003) describe this change as changing from ‘an expert for the transmission of contents to a professional self-understanding that focuses on facilitating and accompanying the learning processes’ (2003, p. 142). This change has been found to deeply affect the professional self-concept of the educators involved (Knowles, 1975, Mezirow, 1998). Knowles (1980), for instance, described his change to a learning facilitator as follows:

[2] Therefore, phases of a teacher-centred input (front-loading) can and should very well be part of constructivist curricula. They are definitely part of DGUV´s new constructivist curriculum.

> It required that I extricate myself from the compulsion to pose as an expert who has mastered any given body of content and join my students as a continuing co-learner. I found myself functioning primarily as a procedural guide and only secondarily as a resource for content information. (p. 35)

Becoming a learning facilitator touches on issues of professional identity, as it requires profound changes in the concept of one's professional role. It is therefore not an easy process, especially for educators who have been used to enacting the traditional role of an expert.

In addition to changes in one's professional self-concept and identity, what is required in the change towards learning facilitation is a fundamental change in the attitude towards learners. Whereas in the knowledge transmission approach, learners are predominantly perceived as having to learn what is presented, an educator with a constructivist attitude believes that learners are capable of autonomous learning, of taking responsibility for their own learning and that progress towards even more autonomous forms of learning is possible. Along with this change towards more autonomy, the educators increasingly reduce the knowledge input part and make themselves more and more redundant. This idea is captured in a model developed by Grow (1991) that describes that the more autonomous learners become, the more an educator can leave the role of teacher and authority figure and develop in the direction of delegator and facilitator (Grow, 1991; Verloop & Vermunt, 1999).

However, if what is required in learning facilitation is for educators to take on an increasingly less prominent role, leave more space to the learners and conceive of them as being able to guide and construct their own knowledge, this may lead to feelings of instability, insecurity and even resistance on their part (Boege, 2015). Giving more space to learners may be conceived as threatening, especially by those who have different views about how learning and teaching work.

2.3. Educational change

2.3.1. Adoption of constructivism as an organisational change process. In the context of an organisation that used to be rather traditionally oriented like the DGUV, the change towards constructivism can be considered as an educational change process (Clarke & Hollingsworth, 2002; Hord & Hall, 2000; Maskit, 2011). Firstly, as stated previously, adopting a constructivist curriculum involves changing form trainer to

learning facilitator, a process which is not always easy. It also implies a change for the course participants, who in general, have been exposed to learning experiences in which subject matter transmission and teacher-centred forms of training prevailed. Changing to a more self-organised form of learning frequently meets with irritation and resistance because it does not correspond to the participants' conceptions about what 'good teaching' or 'going to a seminar' entails (Akerlind & Trevitt, 1995; Boud, 1989; Clifford, 2006).

In addition, management and administrative levels are affected. As the top management took the decision to take on the approach, they had to explain the rationale for the change at staff assemblies and motivate educational managers and trainers to adopt it. To be credible, the management has to live and promote the change in the organisation (Hallinger, 1992, 2003). The change also affects middle management, as they have to 'sell' the innovation to both external and internal trainers. This is a challenge, especially in the early phases of the process, in which the middle managers are still the process of making sense of the innovation themselves (Piderit, 2000; Rouleau, 2005). Therefore, a constructivist change is a change process that affects all organisational levels.

Educational change processes have been widely researched (Fullan, 2002; Geijsel & Meijers, 2005; Richardson & Placier, 2001). This section reviews the educator-related factors that have been found to influence the uptake of innovations within educational contexts. The factors comprise demographic variables such as age and gender as well as factors relating to teaching orientations and beliefs. A model of how an educational innovation may be adopted will be presented at the end.

2.3.2. Age. The role of age in the uptake of educational innovations is not clear. Studies reveal heterogeneous results, sometimes finding that older teachers are less engaged in taking up educational innovations, sometimes finding that there are no differences between younger and older teachers. In a study with veteran teacher educators, Brody and Hadar (2015) report that older teacher educators were less open to educational innovations than novices were. They explain this with the self-image of being an experienced expert held by the older teacher educators. Younger trainers, they argue, are less fixed with respect to their professional identities and are therefore more open to educational innovations. Ketelaar et al. (2012b), investigating a change that required teachers to take on more of a coaching role in an educational reform in the

Netherlands, however, found that the adoption of the approach neither depended on age nor on years of teaching.

Some studies investigated the uptake of an educational innovation with respect to the career stage a teacher was in. As older teachers are generally more advanced in their careers, these studies shall also be reported here. Mazit (2011), for example, found that novices and teachers at the stage of 'career wind down' were less open to didactical innovations, while at stages like 'enthusiasm and growth', teachers were more open to it. Her explanation is that novices are still at the stage of 'surviving' in class (Fuller, 1969), therefore they are not open to incorporating innovations. Similarly, teachers at the end of their careers are no longer interested in innovations, as these have no relevance for their future actions. De Vries, Jansen and van de Grift (2013), however, found no effect of teacher life cycles (Huberman, 1989) when investigating participation in continuing professional development. With respect to the influence of age, therefore, inconsistent results are reported and there seems to be no clear relationship between age and the uptake of an educational innovation.

2.3.3. Gender. Similarly, gender does not seem to be an important determinant in influencing teachers' adoption of educational changes either. The study by Ketelaar et al. (2012b), investigating teachers' integration of a coaching role found no effect of gender. Similarly, Sang, Valcke, van Braak and Tondeur (2010) investigated student teachers' prospective use of information and communication technology in the classroom. They report significant correlations for all variables except for gender. Therefore, even with regard to an educational innovation in the area of information technology use, where gender difference might have been expected, these have not been shown. Damanpour and Schneider (2006), investigating adoption of organisational innovations in public institutions with over 1200 managers found no differences with respect to age and gender. Managers' attitudes towards innovation had a stronger influence than demographic characteristics. Therefore, gender does not seem to be a decisive factor in taking on an educational innovation.

2.3.4. Teachers' orientations. In contrast to demographic variables, beliefs and attitudes have been shown to have strong effects on the adoption of educational innovations. In the following section, research on beliefs and teaching orientations and their relationship with the uptake of innovations in education will be reviewed.

Teaching orientations have been classically divided into teacher-centred and student-centred approaches (Entwistle, 2009; Samuelowicz & Bain, 2001; Van Driel, Bulte, & Verloop, 2007). The teacher- or subject matter-centred approach focuses on the transmission of content and knowledge to learners. The teacher plays a central role in delivering the subject matter to the course, the course itself is treated as 'one collective student' (de Vries &van den Grift, 2013, p. 81). In contrast, student-oriented approaches are 'based on constructivist theories of learning' (de Vries & van den Grift, 2013, p. 81). Within this orientation, the educators take account of the individual differences of the learners (Pieter & Verschaffel, 2013).

Gow and Kember (1993) identified five teaching orientations, from totally teacher-oriented to maximally student-centred. From this perspective, the two positions described above are seen as two poles of a continuum rather than an either/or dichotomy (Kerber, 1997). Beijaard, Verloop and Vermunt (2000) identified three orientations that form teachers' professional identities: subject matter experts, didactical experts and pedagogical experts. They found that teachers differed in the degree with which they ascribed themselves to the different roles and that their orientations and weightings changed over time: Many teachers had become less subject matter oriented than they were at the beginning of their careers. Similarly, Alger (2009) found that teachers had become less teacher-centred and more student-centred over the span of their careers. Thus, teaching orientations are not static but change over time. In addition, they may be made up of different components that can be weighted differently at different times.

Teaching orientations are closely related to views about the nature of learners and learning. Van Driel and Verloop (2002) for instance showed that teacher-centred teachers had relatively low confidence in students' knowledge and abilities, whereas student-centred teachers had relatively high confidence. As teaching orientations are related to deeply held beliefs about the nature of learning and learners, these orientations tend to be stable and are generally not subject to rapid change (Van Driel & Verloop, 2002). However, change can take place over longer periods of time, sometimes comprising entire career spans. As changes within the context of educational reforms are often required to take place quickly, the next section reviews the extent to which teaching orientations have been found to influence the uptake or non-uptake of educational innovations.

2.3.5. Congruence with own beliefs. In a study on the adoption of an innovation for in-service teachers, Smylie (1988) found that the teachers' beliefs concerning the innovation were the most significant predictors of change (p. 23). The more in line a suggested educational innovation is with educators' beliefs about learning and teaching, the more likely they are to accept it (Orafi & Borg, 2009; Zhu, Valcke, & Schellens, 2010). Some researchers even go as far as suggesting that adoption is only possible if teachers' beliefs are in line with it. Zhu et al. (2010) state that 'adoptions of educational innovation can only take place when they are congruent with teacher conceptions' (p. 149). Similarly, when reporting on the adoption of a coaching role, Ketelaar et al. (2012b) found an 'engaged group' that readily accepted the change. According to the authors, the engaged group experienced more 'congruence between their teaching style and the coaching approach'. In addition, they say that in 'the process of making sense of an innovation, the teachers compare their own frame of reference with the characteristics and demands of the innovation' (Ketelaar et al., 2012b, p. 334). Thus, congruence of educators' beliefs with the orientation of the educational innovation is a factor that influences its uptake positively.

The beliefs involved in teacher change are often deeply seated and closely related to professional identity (Geijsel & Meijers, 2005; Hodgen & Askew, 2007; Rogers, 2003). Because of this interconnection, orientations about teaching and learning are not easily changed. Ball (1990), McDiarmid (1992) as well as Rinties (2008) all report study results in which the intention to alter teachers' teaching orientations had only limited or no success. In addition, during educational change processes that entailed the presentation of a new teaching orientation, teachers tended to focus on information that supported their current orientation rather than on information that contradicted it (Chinn & Brewer, 1993; Tillema, 2000). Therefore, changing a teaching orientation is not a matter of simply providing evidence regarding the superiority of the new approach.

To summarise, the research on educational change has found that uptake is easier if it is in line with an educator's teaching orientation. A change based on beliefs that are different from the ones an educator holds may be perceived as a threat to their professional identity and is more likely to be opposed.

2.3.6. Model of adoption of educational change. Gregoire (2003) has developed a model of teachers' adoption of educational changes focusing on 'cognitive and appraisal processes'. The model is presented here because it integrates the above-mentioned research well. Several decisions are taken at different points in time that finally lead to the real adoption, superficial adoption or non-adoption of the change process. According to the model, the orientation of an educational reform is evaluated in relation to one's own professional identity and beliefs about teaching and training.

Following Gregoire, there are three ways of reacting to this 'reform message', as she calls it. If the change is in line with one's own beliefs and there is no threat to one's identity, then there is a 'benign appraisal' of the educational change (Gregoire, 2003, p. 165). If the underlying philosophy of the educational change is not in line with one's beliefs and identity and, depending on an evaluation of one's motivation, and personal resources such as time and ability, the educational innovation is perceived either as a challenge or as a threat. Different forms of integration may then lead to no change, a superficial change or a true conceptual change (Gregoire, 2003, p. 165).

Applied to this study, it would mean that educators embrace the change happily if it is in line with their teaching orientations. If it is not, they will decide if to invest resources like time and energy into adopting or integrating parts of it. Alternatively, they could identify learning facilitation as a threat and try to avoid it. Avoidance can take the form of superficial adaptation, non-implementation or active resistance (Gregoire, 2003). Gregoire´ s model would predict that those who are convinced of learning facilitation will happily take it on, whereas trainers who are more sceptical will show signs of evaluating the resources it takes to adapt to it.

From the literature reviewed so far, it might be hypothesised that the closer the constructivist reform is to the OSH trainers' teaching orientation, the more likely they are to adopt it.

2.3.7. Changing beliefs towards constructivism – a contradiction?

Before reviewing models of resistance to change, a short reflection on changing educators' beliefs and training orientation will be made. When looking at the literature reviewed above, it becomes clear that educators' beliefs are deeply rooted in years of personal and professional experience and are closely linked to identity (Geijsel & Meijers, 2005; Hodgen & Askew, 2007). Consequently, they are not easily changed

(Zhu et al., 2010). Nevertheless, many educational reforms seem to try to do just this: Independent of their being convinced or not, educators often have to implement the prescribed reform (Achinstein & Ogawa, 2006; Evers, Brouwers, & Tomic, 2002). In the light of the above-mentioned findings, the question arises as to what extent it is legitimate to try to change educators' beliefs and practices away from their deeply held professional convictions[3] or expect them to work against these beliefs (Handal, 2003).

Changing beliefs and practices towards a supposedly 'better' or 'correct' approach to teaching within the context of an educational reform and to prescribe its adoption, has intricacies. It is based on a top-down view of change, based on the assumption that one party has the right, the power or the access to truth to legitimately try and change the other person´s beliefs or make them comply with the suggested reform (Disterheft, da Silva Caeiro, Ramos, & de Miranda Azeiteiro, 2012). This way of top-down implementation of reforms may be found in matrix organizations with hierarchical and authoritarian structures (Disterheft et al., 2012). However, in the context of a constructivist reform, which puts the individual with their specific preconditions at the centre, one would expect that the educators involved should also be seen through a constructivist lens. That is, it would be expected that they be taken seriously with the individual belief and knowledge structures they have - even if these are not in favour of the constructivist approach.

If one considers the adoption of a new teaching orientation as a learning process (Cochran-Smith, 2003), educators should be allowed entering the reform activities in a way that is congruent with their current belief structures. In addition, one would expect these views to be integrated in a more participatory approach, which would lead to a co-construction and joint sense making of the reform. From a constructivist view, educators with opposing views should not be seen as objects of reform that have to be changed, but as active agents involved in the process (Windshitl, 2002). In addition, research on the success of educational reforms has shown that the more the philosophy of the reform permeates the organization as a whole, i.e. is integrated into leadership and decision making processes, the more likely it is to be implemented also at the educator level (Tondeur, Valcke, & van Braak, 2008). Consequently, a constructivist

[3] Changing educators' beliefs, however, does not necessarily guarantee implementation of the reform as the relationship between beliefs and implementation is a complex one (Clarke & Hollingsworth, 2002; Guskey, 2002; Hoekstra, Brekelmans, Beijaard, & Korthagen, 2009).

reform should ideally be accompanied by a constructivist change in the educational organization (Fullan, 2002; Senge, 1997), as this is likely to make it not only more successful with respect to the degree and depths of implementation, but also more credible with respect to the people involved.

2.4. Resistance to change

2.4.1. Conceptions of resistance to change. The first and the last research question address the question of what leads OSH trainers to not take up learning facilitation or resist it. This section will look at literature and models on resistance to change in organisational and educational contexts.

Resisting an organisational change has long been considered as something inherent in change processes (Rogers, 1965). As changes affect structures, jobs, tasks, and institutional orientations, resistance is likely to occur (Bareil, Savoie, & Menier, 2010). Also, those who adopt innovations and change readily are sometimes viewed positively, whereas those who do not adopt them as quickly or even resist the change are often seen negatively (Coch & French, 1948; Recardo, 1995). Rogers (1963) for example distinguished between those that innovated themselves (innovators), those that readily adopted an innovation (early adopters), those that followed (early majority), those that took some time to follow it (late majority) and those who were reluctant to adopt innovations, whom he called ‘laggards’ (Rogers, 1965). Similarly, Jermier et al. (1996) hold that resistance to change is a ‘reactive process’ (p. 9), where change is ‘actively opposed’ (p. 9). Those who resist change are, therefore, viewed rather negatively.

In the literature on teacher educational change, implicit insinuations that teachers who do not take on innovations are less worthy than those who do can also be found (Brody & Hadar, 2011). Oreg, Vakola and Armenakis (2011) observe this research bias when saying that ‘in their current focus on change in recipients’ reactions, many researchers seem to imply some fault on the recipients’ part, whereby they serve as an obstacle in change agents’ path toward benefiting the organisation’ (p. 32). In the same vein, Piderit (2000) states that in ‘research on resistance to change, researchers have taken the perspective of those in charge of implementing change, and so scholars have written less about the perspectives of those with less power’ (p. 784).

This negative concept of resistance to change was challenged, among others, by Dent & Goldberg (1999). They claimed that resisting can be a legitimate reaction of those who resist, especially, when the anticipated changes are detrimental for them and include issues such as job losses or pay cuts. In addition, change processes are sometimes badly implemented or explained. In these cases, too, resistance can be reasonable and legitimate. Piderit (2000) makes this point explicit by saying that often there are 'good intentions' behind the opposition (p. 784).

Recent research on resistance has adopted an interactionist perspective which takes into consideration that there may be legitimate reasons involved in opposing a suggested change (Iversons, 1996; Jermier et al., 1994). In addition, calls have been made to drop the term 'resistance to change' and use a different terminology (Piderit, 2000). In the educational literature, the term 'friction' (Vermunt & Verloop, 1999) is increasingly used to account for a mismatch in teachers' teaching strategies and learners' learning strategies. However, many recent research articles, still bear 'resistance to change' in their titles, even when using a modern conceptualisation of the term (see Billot & Gaeta, 2014; Bronkhorst, Koster, Meijer, Woldman, & Vermunt, 2014; Burnes, 2014; Thornberg, 2014). Therefore, the term 'resistance to change' will also be used in this study.

Piderit (2000) found that resistance to change is not a dichotomous phenomenon, consisting in either accepting or rejecting a suggested change. According to her, resistance is 'a tridimensional attitude towards change, which includes affective, behavioural and cognitive elements' (Piderit, 2000, p. 787). As these are not always congruent, persons involved in the process often have ambivalent attitudes towards the change.

2.4.2. Dynamic model of teacher change. Brody and Hadar (2011) developed a 'dynamic four-stage model of personal professional trajectories'. It is an empirical model developed within teacher education research that stresses the dynamic nature of change. The authors identified different pathways through which educators went until finally accepting or rejecting a change. The authors researched how novice and experienced teacher educators responded to a three-year longitudinal professional development community dealing with an educational innovation. They found that during this process, educators went through four stages. An initial stage of 'anticipation and curiosity' was followed by a stage of 'withdrawal from the change-oriented goals'.

From this stage teachers may go to a form of more permanent resistance which the authors call ‘stasis’ or ‘drop out’. Teachers who pass through the stage of withdrawal and get to the stage of ‘awareness’ become aware of the potential benefits of the innovative teaching practice. Awareness can lead to change - the disposition to implement the innovation in their courses.

Interestingly, Brody and Hadar found that all educators involved passed through these phases, although they followed different developmental pathways. In addition, even those who were in favour of the approach passed through a phase of withdrawing from it at some stage. Perhaps the ambiguity described by Piderit (2000) is an inherent part of adopting an educational innovation, independent of whether or not it is eventually accepted.

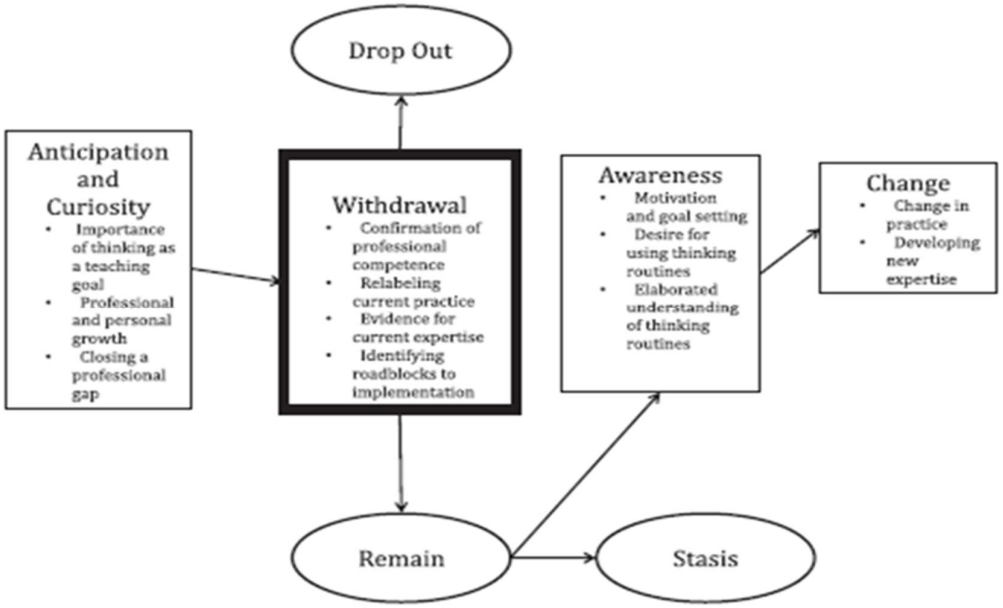

Figure 1. Dynamic model of personal professional trajectories (Brody & Hadar, 2011)

The phase of withdrawal is particularly interesting as it reflects a sort of resistance to change. Once the educators began to learn about new methods, their optimism and excitement shifted to scepticism accompanied by positive self-appraisal of their current practice. In this phase of withdrawal, they were no longer open to adopting new ideas but constructed ‘protective mechanisms’, which prevented significant learning (Brody & Hadar, 2011, p. 1231).

Such protective mechanisms comprised ‘confirming their professional competence’, ‘relabelling their current practice’, ‘looking for roadblocks to implementation’ or ‘finding evidence for current expertise’ (Brody & Hadar, 2015, p. 257). Experienced educators, therefore, either relabelled their current practice without making any substantive changes in their teaching or identified external impediments to implementation, like ‘student complaints, the need to cover material, and time constraints’ (Brody & Hadar, 2015, p. 257). Brody and Hadar called these external factors ‘roadblocks to implementation’. Interestingly, the teacher educators seemed to reaffirm their sense of professional self by either finding internal reasons for not adopting the innovation or by identifying external obstacles that impede adoption. Moving out of this withdrawal phase towards awareness was triggered by discussions and reflections within the learning group.

To conclude, the model conceives of professional development in the framework of an educational innovation as moving through different stages. Educators varied with respect to the pathways chosen and the speed at which they passed through them. Sometimes, a return to formerly practiced ways of teaching could be observed, as well as movement in between the different phases. According to this model, withdrawal and resistance can be permanent or transitory. Withdrawal can lead to later adoption. However, withdrawal can also lead towards abandoning the educational change altogether. Finally, remaining passive, that is, neither opposing the change nor changing anything in teaching practice, is also possible. A central point is that during withdrawal, the need for identity reaffirmation is high (Brody & Hadar, 2011, p. 1231). Thus, reassuring oneself of one’s expertise as an educator is an important part of the change process - be it towards resistance or towards real conceptual change. The merit of this model is that it shows that resistance to change is not a static state and that the nature of professional change is dynamic.

2.4.3. Predictive model of change. Brody & Hadar’s descriptive model will be complemented with a predictive model of organisational change (Oreg, 2003). Oreg identified several factors that predict under which circumstances resistance to change will take place and, whether the expected resistances are likely to be found on the cognitive, emotional or behavioural level.

With respect to organisational change processes, Oreg (2006) differentiates between the procedures used to implement the change and its outcomes. People can

resist the process, the outcome or both. Negative attitudes toward the implementation *process* leads to resistance on the behavioural level. That is, people counteract the required change or do not implement it. If people object to the *outcomes* of a change process, resistance is found on the cognitive and the emotional level but not necessarily on the behavioural level. That is, people may feel or think negatively about the change but may still implement it.

In line with Nord and Jermier (1994), Oreg (2003) states that people evaluate whether or not a change outcome will be negative for them. Oreg identified three *outcome* factors: power and prestige, job security and intrinsic rewards. . If people lose power or prestige, if their job security or the intrinsic rewards they draw from their job are threatened as a consequence of the change process, people will respond negatively. As *process* factors, he identified 'trust in management', 'information' and 'social influence'. If during the process of implementing the change, people feel that they can trust their management, that they receive quality information and that their peers also support the process, resistance is less likely to occur. Conversely, lack of trust, lack of quality information or negative social influence can all lead to resistance on the behavioural level, for instance to the non-implementation of it. Resistance that is not behavioural may take on the form of doing what is required or suggested by the reform yet opposing it internally.

The merit of the model lies in its predictive power and its differentiated view of resistance to change. What part and which element of the process people resist influences how they feel, think and act about it (Oreg, 2006, p. 75). Depending on what exactly is threatened, different responses and reactions should be observed. With respect to this study, it is assumed that trainers' power and prestige are not affected by the educational change as there are no promotions or downgrading associated with the change. In addition, job security is not assumed to play a dominant role in resistance; as trainers are employees of a public sector institution that does not fire people if they do not adhere to an institutional change. The model will orient the research of this study towards looking for reactions to both the change processes and their outcomes. In addition, factors like intrinsic rewards, trust in management, information and social influence may be looked at more closely in order to see if they play a role for the trainers researched.

To conclude, research on resistance to change has to consider the possibility that those who resist the change may have good reasons to do so. Resistance may take on the form of identifying external reasons for non-adoption or identifying one's own practice with the suggested change. Oreg's model differentiates between the process and the outcome of the change process. For this study, the loss of intrinsic rewards, trust in management, information and social influence may be important factors to look at.

Chapter 3: Methodology

This study consists of a quantitative part and a qualitative part. This chapter deals with its methodology. After a brief overview of the theoretical underpinnings of quantitative, qualitative and mixed methods research, the rationale of why a mixed methods approach was chosen is explained. The methods selected for each of the parts are also presented.

3.1. Quantitative and qualitative paradigms

For this study, an online questionnaire and a semi-structured interview were chosen as research methods. Generally, questionnaires as a research method are associated with the quantitative research tradition whereas semi-structured interviews are associated with the qualitative research paradigm. Each paradigm will be briefly explained.

3.1.1. Quantitative research paradigm. Research paradigms are based on a particular philosophy of science. They deal with the question of what counts as scientific knowledge and as scientific truth (Popper, 1995). The epistemologies underlying quantitative research are positivism and empiricism, originally put forward by philosophers such as Locke and Hume (Ayers, 1999). Empiricism assumes that knowledge about the world can be accessed by observation and experience. It also claims that there is an objective outside reality about which objective knowledge can be obtained.

The objective reality and the data gathered are independent of the observer. Measurements under the same conditions should lead to the same results. Scientific truth testing is done on the basis of hypothesis formulation and hypothesis refutation, as strictly speaking, hypotheses cannot be confirmed but can only be falsified (Popper, 1959). As the general aim of the quantitative approach to science is to get to generalizable statements about the world, data collection and sampling methods that allow such generalizations are favoured. Therefore, research tools that collect a sufficient amount of data to allow statistical analyses to be carried out, such as surveys or questionnaires, are generally selected. Research methods include experiments or quasi-experimental designs. Research results are considered objective unless a more parsimonious or simpler explanation has been found (Thoburn, 1918).

As research results are considered reflections of the objective reality ‘out there’, the language of reporting quantitative findings is normally neutral and impersonal, stressing the objective nature of knowledge and the objective nature of the researcher. In fact, within the quantitative paradigm, who carries out the research is not supposed to have an influence on the results, as similar measurements and analyses should lead to similar, objective results. The quality criteria for quantitative research are objectivity, reliability and validity.

Quantitative researchers’ views of science have been criticised by studies in the philosophy of science, showing that scientific theories are not always refuted on the basis of hypothesis rejection but on more structural ‘paradigm shifts’ (Kuhn, 2012, Feyerabend, 1976). Also, observer effects have been reported for experiments in physics, showing that science is not as ‘objective’ as suggested by a strong empiricist position. In this study, the questionnaire design, the data collection and the statistical analysis of the data in the first part follow a more quantitative approach.

3.1.2. Qualitative research paradigm. The qualitative research paradigm is based on a different epistemology and stems from the philosophical tradition of idealism. Qualitative researchers hold that although there might be a reality ‘out there’, it cannot be easily be observed or experienced. What is perceived of the outside world is actively construed by the observer. Qualitative research draws on philosophical schools such as hermeneutics (Schleiermacher & Frank, 1977, Gadamer, 1961), phenomenology (Husserl, 1950) and epistemological constructivism (von Glasersfeld, 1996). The degree to which qualitative epistemologies concede that an outside reality can be known, varies, ranging from radical constructivism (von Glasersfeld, 1996) that denies that access of a reality can be obtained at all to more moderate forms (Windshitl, 2002).

In qualitative research, the person doing the research plays a fundamental role in constructing or co-constructing the research and the knowledge resulting from it (Denzin & Lincoln, 1994). The observer and the observed are not independent but influence each other. Therefore, knowledge is never objective but culturally, socially and personally situated. An interview study done by one researcher will not yield the same results as a study carried out by a different researcher.

However, far from being arbitrary, qualitative research has its own quality criteria that focus on credibility, trustworthiness and dependability. Quality ensuring

mechanisms such as interrater coding, research memos and respondent validation are applied to ensure that the research is not only the researchers' story, but that the way they have come to their interpretation is transparent for others.

As findings are always context-bound, the aim of qualitative research is not generalizability. Rather, gaining an in-depth understanding of the phenomenon investigated (Glaser & Strauss, 1967) through thick descriptions (Powney & Watts, 1987) of the lived experiences of the individuals involved is considered important. As one aim of this study was to get to an in-depth understanding of those critical of learning facilitation, semi-structured interviews were chosen as research instruments for the second part of the study.

3.2. Mixed research

Mixed research tries to reconcile the dichotomy posited by quantitative and qualitative approaches, suggesting a third, more pragmatic, approach (Dewey, 2008; Pierce, 1905). Johnson and Onwuegbuzie (2004, 2006) suggest a continuum between purely quantitative and purely qualitative research, holding that mixed research lies in between the two positions. They state that mixed research should 'use a method and philosophy that attempt to fit together the insights provided by qualitative and quantitative research into a workable solution' (p. 16). In line with the pragmatic approach, the starting point for mixed methods research is the research question. According to Creswell (2003), the methods that are to be selected are those that are most likely to answer the research question. In line with pragmatism, the focus is on 'what works'.

Johnson and Onwuegbuzie (2004, 2006) list the pragmatic advantages of a mixed research approach without claiming to have solved the disputes about the nature of truth. Bryman (2006) summarises this position saying that mixed method research 'prioritizes the research question and relegates epistemological and ontological debates to the side-lines. In doing so, it clears the path for research that combines qualitative and quantitative research' (p. 118).

With respect to ontology, Johnson and Onwuegbuzie (2006) state that 'there is room in ontology for mental and social realities as well as the more micro and more clearly material reality' (p. 15). With respect to epistemology, mixed research views

knowledge as 'being both constructed *and* based on the reality of the world we experience and live in' (Johnson & Onwuegbuzie, 2006, p. 18).

Within mixed research, different 'paradigm emphasis decisions' have to be taken. For instance, the qualitative and the quantitative parts of a mixed research study can either have an equal status, or a dominant status can be attributed to one of the paradigms (Teddlie & Tashakkori, 2009). Depending on whether the qualitative and the quantitative part of the study are carried out simultaneously or sequentially, parallel or sequential mixed methods study designs exist (Teddlie & Tashakkori, 2009). The choice of order and timing is, of course, dependent on the research questions. Therefore, while a mixed research study can take the form of two sequential mini-studies, each maintaining the internal logic of the respective paradigm where mixing only occurs at the end of the study, Onwuegbuzie et al. (2011) suggest a 'strong paradigmatic mixing stance', where more, rather than fewer, components show elements of mixed research.

Concerning the framework for data interpretation and drawing inferences, mixed research poses several questions: How can inferences be deductive and inductive at the same time? What framework shall be used for the overall analysis? And what kinds of quality criteria are to be applied (Bryman, 2006; O'Cathain, Murphy, & Nicholl, 2010)? Here again, a great variety of options is possible. With respect to quality criteria, for instance, Bryman (2006) suggests that depending on the kind of mixed research (equal status or dominant status) and the ordering (sequential or parallel), either separate, contingent or bespoke quality criteria could be used.

To conclude, researchers working within the paradigm of mixed research have to ask themselves why they want to situate their study within this paradigm. Also, they have to decide what kind of integration of the results is wanted and how meta-inferences are to be drawn.

3.2.1. Rationale for using mixed research in this study. The rationale for using mixed research in this study is that it appeared to be the best approach to answer the research questions. This study explores the motivations of trainers to adopt learning facilitation. It is assumed that these motivations may be varied, including trainers very much in favour of the approach as well as trainers who are more reserved or even critical of it. As breadth of information is wanted from the maximum number of trainers, a quantitative approach using questionnaires was chosen for the first part of the

study. To complement the questionnaire part, the second, interview part of the study aimed at probing deeper and exploring the motivations of some of the trainers who had filled out the questionnaire further. Depending on the different pathways through the questionnaire, those who had implemented learning facilitation immediately, those who had dropped out after first implementation intents as well as those who were critical were to be selected for the interviews.

However, the questionnaires were predominantly answered by those who were in favour of the approach. The critical and more sceptical trainers had not given their contact details. Therefore, I decided to focus especially on those critical of learning facilitation in the interview study. This decision took into consideration that there already existed an interview study with trainers who were very motivated to implement learning facilitation (Boege, 2015) and that not much was known about those who did not implement it. In addition, of those who had answered the questionnaire, only eight trainers had not implemented learning facilitation. To answer the third research question satisfactorily, it was felt that more in-depth data was needed about the critical group. Therefore, only critical trainers were approached for the interview. The exact procedure is described in the section 3.3.3.2. on participant selection.

The combination of a questionnaire part with an interview part was designed to capture both the breadth of motivations of all trainers who had trained as learning facilitators and in-depth data from critical trainers. The aim is that the combined results answer the research questions in a more complete way than individual studies carried out in isolation (Johnson et. al, 2007).

3.2.2. Mixed methods methodological decisions for this study. This study has a sequential, mixed methods design as the quantitative research is carried out before the qualitative research (Teddlie & Tashakkori, 2009). The two parts assume a similar weight, so that the overall study has an ‘equal status’ design. As suggested by Onwuegbuzie et al. (2011), integration is attempted throughout the process: Instead of different research questions for different parts of the studies, the same overarching research questions are addressed in both parts (Tashakkori & Creswell, 2007). In addition, mixing occurred at the stage of instrument design, as the interview guide drew on the literature reviewed as well as on the results of the questionnaire part of the study. Thus, results from the first part of the study influenced the design of the interview guide for the second part.

Although mixing occurred at several stages in the research process, within the two parts of the studies, the rules and procedures established for each kind of research are being used. The questionnaire part is reported in a more formal language, avoiding first person language and using the quality criteria of objectivity, reliability and validity. The interview study is formulated in a more personal way and draws on the quality criteria of credibility, transferability, dependability and confirmability (Lincoln & Guba, 1985). Complying with the agreed upon standards in each of the approaches is in line with the recommendations for mixed methods research (Teddlie & Tashakkori, 2009).

3.3. Methods

3.3.1 Research design. The study used a sequential mixed methods design, in which the quantitative and the qualitative parts were assigned equal status. The questionnaire part used an online questionnaire; the interview study semi-structured interviews.

3.3.2. Selection of methods

3.2.2.1. Rationale for choosing questionnaires. At the time of data collection, 139 trainers had taken the learning facilitator course. As data from all of the facilitators trained should be collected, questionnaires were chosen as instruments as they allow researching a broad sample in a short time.

3.2.2.2 Rationale for choosing interviews. Semi-structured interviews are especially suited to exploring the personal and lived experiences of interviewees (Legard, Keegan & Ward, 2003). As the individual motivations of the critical trainers were of interest, personal interviews rather than focus groups were chosen. The preference for interviews was based on the consideration that critical trainers may talk more freely in a setting where only the researcher and the participant are present (Gribble, Miller, Rogers, & Turner, 1999; Morgan & Krueger, 1993), especially as Gill, Steward, Treasure & Chadwick (2008) suggest that interviews are ‘particularly appropriate for exploring sensitive topics’ (p. 292).

Semi-structured interviews were used rather than structured or open interviews (Silverman, 2000) as they allowed asking the same key-questions to all the interviewees (Powney & Watts, 1987). The key-questions provided a basis for comparability between the interviews. In this case, questions concerning motivation, attitudes and being critical of learning facilitation were posed to all interviewees. Whenever reasons for being

critical were mentioned, there was space for further probing. This was considered essential as motivations for not taking up learning facilitation were of special interest here.

3.3.3. Participants

3.3.3.1. Questionnaire participants

3.3.3.1.1. Sample selection. The criterion for inclusion in the sample was participation in the one-week training course on learning facilitation at the Institute of Work and Health in Dresden. The course was selected because it is the foundational training course for learning facilitation and the main organisational measure for implementing the educational change. At the time of the data collection, ten basic trainings of learning facilitation had taken place between November 2013 and June 2016, all of which were included in this study. The average number of participants was 14 in each course, with a minimum of 11 and a maximum of 18. All courses were taught by the same trainer team. They were identical in contents, methods and duration.

Participants of the courses were OSH trainers from all over Germany who work for the DGUV or its member organisations. In addition, trainers from government bodies related to occupational health and safety also participated. Finally, freelance trainers working for the DGUV or its member organisations also took part. Some of the participants took the course voluntarily. Others took it because their organisation required it. Many statutory accident insurance organisations, for instance, required their employed trainers as well as their external trainers to participate.

The total number of persons available for recruitment was 139. Inclusion in the sample depended on self-selection to participate by answering the questionnaire. It was answered by 62 persons, giving a response rate of 44.5%. This percentage is in line with the reported mean response rates for online questionnaires, which range between 39.6% and 52.3% (Anseel, Lievens, Schollaert & Choragwicka, 2010; Cook, Heath, & Thomson, 2000). In the section 3.3.5. on procedures, more details about the way participants were approached will be given. The sampling procedure was based on convenience (Sedgwick, 2013). A convenience sample is a non-probabilistic sample that does not allow to draw inferences from the sample to the target population (Kitchenham & Pfleeger, 2002).

3.3.3.2. Interview participants

3.3.3.2.1. Gatekeeping and recruitment. First, the workers' committee of the organisation was approached in order to clarify whether approaching trainers critical of the approach needed further permission. The nature of the research, the types of questions, data storage and data use were explained. The workers' committee had no objections to me approaching possible interview candidates as long as it was made clear to them that participation was voluntary.

Subsequently, I approached the prospective participants personally. The sampling approach will be described in the section 'sampling approach' below. With the sensitive topic of being critical of learning facilitation, it was felt that a direct approach was more appropriate as it would allow those approached to seek clarification immediately, should they wish to. In addition, it was an opportunity for me to ensure that the participants selected were in fact critical of learning facilitation. After approaching them (the details of how I approached them will be described further in the section 'contacting participants'), I explained the purpose of the study briefly and dealt with any further questions. I made very clear that participation was voluntary and that they would have time to reflect on their participation. If they agreed to participate, I asked them to send me email stating their interest in participating. On receiving the email, I sent out the participant information sheet and a consent form. If trainers did not want to participate, they could just ignore the request. If they were interested after having studied the information sheet, they were asked to send me a suitable date for an interview. The procedure of recruitment was designed in such a way that the initiative was left twice on the participants' side. There were two opportunities, therefore, where participants could have withdrawn silently without having to decline the request directly. I considered this important to safeguard the well-being of the participants and to carry out the research in the most ethical way possible.

3.3.3.2.2. Sampling approach. Selection of the sample was both opportunistic and purposive (Abrams, 2010; Curtis et al., 2000). Initially, I approached four trainers who had openly expressed their discontent with learning facilitation in various opportunities. All four trainers reacted positively to my request. One even recommended other critical colleagues for me to interview. When approached, two of these told me they were indeed critical of learning facilitation and volunteered to participate. The sampling procedure was therefore a stepwise process, which started

with approaching some participants who then suggested others. This technique is sometimes referred to as snowball sampling and is particularly useful for hard-to-reach populations (Biernaki &Waldorf, 1981).

3.3.3.2.3. Participant characteristics. In total, six experienced trainers were interviewed. The first was an OSH expert who teaches occupational health and safety (Tom). The second interviewee teaches issues such as occupational health and safety as well as other topics related to prevention (Lisa). The third interviewee was the head of an educational training segment that was restructured (Peter). The fourth interviewee (Heinrich) was in charge of a segment of continuous training offers of the organization. He also gives seminars in occupational health and safety issues. The fifth interviewee (Ben) was a labour inspector who used to be a high-level manager of a statutory accident insurance organisation. He now still works as a trainer in the course for labour inspectors. The sixth interviewee (Chris) was teaches topics related to occupational health hazards as a freelance trainer in the courses for safety experts and labour inspectors.

In total, there were five men and one woman in the sample. As more men are active in this profession, the predominance of men in this sample is not surprising. Their ages ranged from 50–65, and their training experience was between 15 and 40 years. In addition to being trainers, two of the six interviewees have further educational responsibilities as they are responsible for whole training segments.

Table 1. Sex and institutional affiliation of the interviewees

Participant	**Sex**	**Function**	**Institution**
01_Tom	M	OSH expert, trainer	DGUV
02_Lisa	F	Project manager, Trainer	DGUV
03_Peter	M	Head of an OSH training course and of OSH further training, trainer	DGUV
04_Heinrich	M	Head of an OSH training course, trainerr	DGUV
05_Ben	M	Committee member for restructuring of labour inspection training course, former head of prevention	Statutory Accident Insurance
06_Chris	M	Freelance trainer for OSH topics in the courses of safety experts and labour inspectors	Freelance trainer

After six interviews, the data base seemed sufficient for the aims of this exploratory study, as a wide variety of ways of and reasons for being critical had been collected (Glaser & Strauss, 1970).

3.3.4. Instruments

3.3.4.1 Questionnaire

3.3.4.1.1. Questionnaire design. As research investigating the transition from trainer to learning facilitator is quite new, there are to date no standardised questionnaires on this topic in the literature. In addition, the training course is quite specific for the organisation as it was tailor-made for the educational reorientation at DGUV. Therefore, it was decided to design a questionnaire that addressed the specific research questions of the study and took into consideration the idiosyncrasies of the organization.

3.3.4.1.2. Content. The content of the questionnaire aimed at answering the research questions posed. This section summarises the literature that inspired the different items in the questionnaire. This comprised literature relating to the motivations of pioneer learning facilitators, literature on the motivation of trainers for their professional development and literature on learning facilitation. Each will be dealt with in turn.

3.3.4.1.3. Motivation to develop professionally. Rzejak et al. (2014) developed an instrument that measured teachers' motivation to participate in continuous professional development. They distinguished between those teachers who were mainly motivated to participate by the prospects of social interaction with others, those who were mostly motivated by wanting to satisfy external expectations, such as the expectations of superiors to participate in training courses, and those with career and development orientation or the motivation of growing professionally (p. 150). From this research, the idea of including different types of training motivations in the questionnaire, such as 'opening career options', 'requirement of the employer' as well as 'exchanging with others' was taken. When dealing with motivations to become a trainer or a learning facilitator, items were adapted from the scales suggested by Rzejak et al. (2014). In addition to the motivational aspects suggested by Rzejak et al. (2014), subject matter orientation was added, based on research on the factors influencing

teachers' uptake of educational innovations described in the literature (see Orafi & Borg, 2009).

3.3.4.1.4. Motivations and challenges reported by pioneer learning facilitators. Motivations for the uptake of learning facilitation as well as the challenges encountered during implementation were identified in a study with 'pioneer' learning facilitators (Boege, 2015). The challenges that learning facilitators encountered were 'resistance from seminar participants', 'having to deal with insecurity' and finding that giving constructivist classes was 'hard work' for learning facilitators as well as for participants involved. In addition, facilitators interviewed for the abovementioned study were highly motivated by the desire to advance their own professional development and that of their seminar participants. The motivations and challenges identified in that study were incorporated in the construction of the questionnaire content as it was assumed that they may be important for the uptake or non-uptake by the trainers in this study.

3.3.4.1.5. Seminar changes in line with learning facilitation. The questions about learning facilitation, such as whether participants felt they were moving more in the direction of learning facilitation, were informed by the available literature (Arnold, 2006; Arnold & Schüßler, 1998). The questions about learning facilitation implementation in seminars were taken from a list by Arnold in which he contrasts enabling didactics with classical didactics (Arnold, 2006, p. 10).

3.3.4.1.6. Attitudes, beliefs, organisational support and roadblocks to implementation. Finally, questions based on the literature related to the effects of attitude on the adoption of an educational innovation (Orafi & Borg, 2009; Zhu, Valcke, & Schellens, 2010), on the role of support during the implementation of educational innovations (Hoekstra & Korthagen, 2011) and on resistance, withdrawal and 'roadblocks to implementation' (Brody & Hadar, 2011) were incorporated.

3.3.4.1.7. Sections of the questionnaire. The different items of the questionnaire followed from the research questions and from the literature relevant to this study. First, the areas of interest were formulated based on the literature. Second, the question format most suitable for obtaining the required information was selected. In the process of designing the questionnaire, different questions types and wordings were tried out until the question captured best what was of interest. A questionnaire with four main sections resulted. The sections were: biographical information, motivation to work as a

trainer, learning facilitation, and challenges and trends. In the final part, participants could give their contact details if they were willing to participate in the interview. The complete questionnaire can be found in annexes 3 and 4.

3.3.4.1.8. Filters. Filters were set at points where experiences of the participants differed to account for the different pathways they may have taken after the basic training course. Those who had not tried out learning facilitation were asked about their reasons for non-implementation. In addition, filters were set for those who had encountered challenges and continued with implementation and those who had encountered challenges and given up on implementation. The questionnaire contained 50 questions, of which a maximum of 40 and a minimum of 31 could be answered depending on the individual pathways taken through the questionnaire.

3.3.4.1.9. Likert scales. In the literature on questionnaire design, much can be found about the construction of Likert scales (Leung, 2011; Norman, 2010; Sullivan & Artino, 2013). The number of points on the scale and the effect that odd or even numbered Likert scales have on the respondent has always been of special interest (Dalal, Carter, & Lake, 2014; Prüfer, Vazansky, & Wystup, 2003;). In this questionnaire, an even numbered four-point Likert scale was chosen. This obliges the respondent to mark a tendency rather than to be able to opt for a neutral middle position. The exact wording chosen for the degree of agreement or disagreement, respectively, was based on recommendations by Rohrmann (1978) and Prüfer et al. (2003).

3.3.4.1.10. Open questions. Open questions and commentary fields complemented some of the questions. They were included to help with the interpretation of the multiple choice items. If, for instance, respondents say that their seminars have not changed, the commentary fields allow them to clarify whether they are critical of the approach or whether they have been implementing learning facilitation for a long time already. Similarly, participants are asked with a Likert scale question about their current attitude towards learning facilitation and the commentary field allows them to add the reasons for their attitude.

3.3.4.1.11. Online versus paper-and-pencil questionnaire. As one aim of the study was to identify the trainers critical of learning facilitation and interview some of them– it was checked whether social desirability or self-disclosure was higher or lower with online versus paper-and-pencil questionnaires. Recent research suggests that there

is no difference with respect to self-disclosure between the two forms (Dodou & de Winter, 2014). Therefore, an online version was chosen as the method for questionnaire administration in this study.

3.3.4.2. Interview guide

3.3.4.2.1. Design of the interview guide. The aim of the qualitative interview was to explore the experiences of those critical of learning facilitation. For the design of the semi-structured interview guide, specialist literature on interview design was taken into consideration (Flick, 2009; Mayring, 2003; Merriam, 2009). Also, literature on teachers' motivation for professional development (Ketelaar, Beijaard, Boshuizen & den Brok, 2012a; Rzejak et al., 2014) as well as literature on organisational change and resistance to change (Oreg, 2006; Sverdlik & Oreg, 2013) was considered. Many of the questions in the interview served to follow up on the questionnaire items and so mirror these (see section above on questionnaire creation). In addition, particular questions were devised to explore motivations for training and professional development that were particular to those who were critical of the new policy. Further detail on which studies were influential in each question are visible in annex 7.

The guide had four sections: The first section dealt with the participants' motivations as trainers. The second section dealt with their critical attitude towards learning facilitation. In the interview guide, 'learning facilitation' was referred to as 'enabling didactics', the term originally used when the didactical approach was launched. The focus here was on how the interviewees had experienced the implementation of learning facilitation in the organisation and on their views on the topic. A question in which they could rate their degree of criticality' was included in this part of the interview. The aim of this interview section was to explore the topic of 'being critical' in depth. The third section dealt with the interviewees' experiences with respect to training measures on learning facilitation provided by the organisation. The fourth and last section explored the issue of implementation. The design of the interview guide was based on the rationale that the interviewees' personal motivations to become trainers, experiences with learning facilitation within the organisation and issues of implementation may all have an influence on their critical stance. The complete interview guide can be found in annex 8.

As stated before, some of the questions of the interview guide were similar to those of the online questionnaire. This was done on purpose to achieve a greater degree of comparability between the two parts of the study. This is line with a 'strong paradigmatic mixing stance' favoured in mixed research designs. Given the fact that very few critical participants answered the online-questionnaire, a chance was seen here to ask them questions from the questionnaire and explore the issues arising. In addition, it was hypothesised that this may help illuminate the ways in which critical trainers are similar to or different from those who answered the questionnaire.

3.3.5. Procedures

3.3.5.1. Procedures for the questionnaire part

3.3.5.1.1. Software for generating the instrument. The software EvaSys was used for generating the electronic version of the questionnaire. It is a specialised software for generating online questionnaires for research projects, organisational surveys and training evaluations. This software was chosen because it was available at my organisation. Apart from cost-effectiveness, using EvaSys had the advantage that organisational support for the program was available. Individual TAN numbers generated by the system were provided to each participant in the covering email. Individual TANs assure that each participant can fill out and send the questionnaire only once. Individual TANs also allow sending reminders only to those who have not yet answered the questionnaire, without bothering those who have already done so while maintaining anonymity.

3.3.5.1.2. Piloting the questionnaire. The piloting consisted of three phases. First, a paper version of the questionnaire was given to one person for general feedback. Then, an online version was sent to four people who knew about learning facilitation and the educational change in the organisation but who had not participated in the basic training course. The persons who piloted the questionnaire were clearly informed about the purpose of piloting (Presser et al., 2004). Subsequently, the testers were interviewed individually. First, they were asked about any general observations. Probing as suggested by Collins (2003) was used to see if they had understood the questions in the intended way. The process resulted in changing the order of some items to enhance clarity and understanding. In addition, adjustments were made to the phrasing and gendering of some items. Translating the questionnaire from English into German and back helped to further clarify the wording and exact meaning of some of the questions.

In the third and last piloting phase, four additional testers received the adapted questionnaire. As a result, a reverse answering sequence was inserted at some points of the questionnaires and all Likert scales were unified to the same four-point format. Testers took between 10 and 15 minutes to fill out the questionnaires. Conceding that participants may need slightly longer, the introductory letter stated fifteen to twenty minutes as the time needed for completion. Before sending out the questionnaire, all questions were checked for spelling and the correct functioning of the filters was verified to ensure easy handling for the participants.

3.3.5.1.3. Contacting participants. The email addresses of the participants of the learning facilitator course were taken from the Institute of Work and Health's (IAG) data base. By giving their email to the institution, the participants had agreed to be contacted for information or research purposes. The participants received a covering email informing them about the aim of the study and the time it would take to fill out the questionnaire. The email also contained the link to the online questionnaire. Ethical information, especially the voluntary nature of participating and opt-out options were highlighted. Participants had three weeks to answer the questionnaire. As research has consistently shown that reminders positively affect the response rate of online questionnaires (Trouteaud, 2004; Wygant et al., 2005), a reminder was sent after two weeks to those who had not responded by then.

3.3.5.2. Procedures for the interviews

3.3.5.2.1. Piloting of the interview guide. The interview guide was piloted with two trainers of the IAG who had participated in the basic training course and were mildly critical of learning facilitation. As a result of the piloting, small changes were made in the wording of two questions. In addition, the order of the interview sections was changed: Originally, the guide started with the questions about the interviewee's attitude to learning facilitation and had questions regarding biographical information at the end. After the piloting, the interview guide was revised so that it began with the section on the biographical data, followed by the section on attitudes towards learning facilitation. This change was perceived as beneficial as the interview seemed to flow more naturally with this new ordering. In addition, piloting led to a readjustment of the scaled questions, in which interviewees were asked to rate their attitude to learning facilitation and their degree of criticality and implementation. Originally, the range was

from 1 to 4. However, as piloters found it easier to associate ‘0’ with a very low degree of acceptance, the range was changed from 0 to 3, where 0 reflected no implementation or a very negative attitude.

3.3.5.2.2. Setting and duration. All interviews took place in a quiet office or seminar room on the premises of the IAG. All were in-person interviews, lasting 40 to 60 minutes each. The interviewees had received the participant information sheet stating the nature of the research, the purpose of the study and the voluntary nature of participation. At the beginning of each interview, the purpose of the study was explained again and the interviewee was given an opportunity to ask questions. In addition, the option of withdrawing from the study was emphasised and the topics of anonymity, data storage and confidentiality were dealt with in detail. The consent form that had been sent previously was signed.

3.3.5.2.3. Audio recording. Of the six interviews, three were audio recorded. Of the three that were not audio recorded, one was due to a technical error as the recording device failed after 10 minutes. The other two interviews were not recorded because the interviewees did not want them to be.

3.3.5.2.4. Potential Effects of not recording three of the interviews

The fact that two and a half interviews were not or not completely recorded, may have potential effects on missed information, data quality, and rapport. The next section discusses these potential effects.

As stated above, two interviewees objected to having their interviews audio-taped. This request was, of course, respected. One interview was only half recorded due to technical problems. During the interview (parts) that were not recorded, I took written notes. Interviewees spoke more slowly to give me time to write down what had been said. In order to assure the outmost trustworthiness of the data, I transcribed the notes immediately after the interview, while the information was still fresh in my mind. In addition, the transcript was sent to the interviewees for respondent validation right after transcription to ensure that they also remembered well what they had said. All three interviewees answered within a day, so it can be assumed that what they had said in the interview was still present in their minds. Mechanisms of quality control that were possible under the circumstances, were therefore applied.

Ashmore and Reed (2000) state that the disadvantage of not recording an interview that it cannot be replayed or listed to again. Similarly, Tessier (2012) says that this leads to a 'loss of information and valuable detail' (p. 449). In fact, when comparing different recording methods, Kieren and Munro (1985) found that about half the data were lost when only field notes were used. Here, however, field notes were not taken simultaneously but time was given during the interview to write down the answers. As taking notes required the pace of the interview to slow down, however, it is possible that I got more information from the recorded interviews as I could allow the interviewees to speak more quickly.

The alternative would have been to exclude the three interviews from the study altogether and only include those that were entirely recorded. However, as critical trainers are not easily recruited, I decided to accept the methodological limitation and include the three interviews in the study.

In addition, taking into consideration issues such as insider research (Mercer, 2007) and informant bias, it would be expected that interviewees are more cautious with respect to what they say if they are being recorded. This may be because they can never be entirely sure what will happen to the data. Also, what is seen as a by Ashmore and Reed (2000), i. e. that the interview can be replayed and be listened to again, may be just what the interviewees want to avoid. Therefore, excluding those who are more careful probably would have meant excluding exactly those interviewees who have important and different things to say from those who are willing to be recorded.

With respect to data quality, it can be assumed that in the non-recorded interviews, not 100% of the information has been captured. Due to the respondent validation and the transcription right after the interview, however, it may be assumed that that which has been recorded truly reflects what the interviewees wanted to convey. Interview quotes from Ben, Chris and Tom, however, have to be read with the limitation in mind that these quotes are not from verbatim transcriptions of audiotaped recording but stem from authorized transcriptions of written answers taken during the interview.

Therefore, missed information may be a limitation. However, an effect that had influence on the quality of the data in the opposite direction is the amount of self-disclosure that was obtained by not recording the interviews. Tom, for instance, who had given his consent to being audio taped, stated when the device broke down, that at

least he could talk ‘more freely`. He even explicitly said: ‘Good that this thing is turned off, so now I can tell you…’ This is in line with what McGuire, Graves and Blau (1985) found with respect to self-disclosure and video-taping, reporting that self-disclosure was higher in non-videotapes sessions that in video-taped ones. It can therefore be assumed that at least in the case of Tom, the unintentional non-recording of the interview, although associated with a potential loss of information and of data credibility, increased the self-disclosure about his reasons for being critical, and, thereby, the trustworthiness of the data. The data recorded are likely to reveal more about his critical stance than would have been the case otherwise.

In terms of rapport, it was vital for me to accept the wish of the two interviewees who did not want to be audio-recorded. Interestingly, with hindsight, it was the interviewee who changed his attitude to a very positive stance (Ben) as well as the pragmatic trainer (Chris) who objected their being recorded. That is, those who had, from the outside, less ‘official reasons’ to object to being recorded, as they were in favour or at least not against the educational innovation. As a hypothesis, it may have been the case that in spite of their more favourable view of learning facilitation, their not wanting to be recorded may have to have more to do with their position in the organization. As a freelance trainer (Chris) and former member of top management (Ben), more political than reasons relating to the content of the interview may have been relevant.

In addition, although many authors suggest that audio recording and subsequent verbatim transcription is the ideal way to record semi-structured interviews (Flick, 2999; Merriam, 2009), there are also authors who generally promote note-taking rather than audio recording (see Clausen, 2012), especially when sensitive issues are at stake (Meier, 2014).

Interestingly, apart from the article by Clausen (2012) the issue of not audio-taping interviews, be it for interviewee objection or technical reasons, does not appear to be a commonly discussed research issue. In a literature search about what other researchers had done in similar cases, I found only one article (Eyrich-Garg, 2008). This scarcity of literature is surprising, as there are presumably many interviewees, especially in vulnerable and exposed settings, who object to being recorded.

3.3.6. Ethics. The participants of the online study were provided an information sheet about the aims of the study. It was made absolutely clear that participation was voluntary and anonymous and that not participating would not affect them in any way.

All interviewees were given information sheets that explained the objectives of the study, the opportunity to withdraw from it and the procedures relating to data storage and data anonymisation. Before the start of the interview, the participants signed the consent form, which they had previously received by email to study. The aims of the study were explained verbally and questions were answered. As some of the interviewees work in the same company as me, they were reminded that we may meet again in other professional or personal contexts and that they may want to consider carefully what to say during the interview. Before the start of the interview, I explicitly asked the participants if they consented to being audiotaped.

Four of the interviewees worked in the same organisation as I. Three had positions higher than myself in terms of organisational hierarchy, one had an equal position. As those who were 'higher' in terms of hierarchy were based in departments different from mine, I was neither directly nor indirectly dependent on any of the interviewees; neither did I have power over them. However, being part of the same organisation may in some cases still provoke a feeling of being morally obliged to support me with my study. Therefore, this issue was discussed individually, especially with the interviewees working in the same institution as myself. This assured that they took the decision freely and consciously and that they were aware of the possible implications of their participation. More reflections on the potential problems involved in having done research in my own organisation can be found under 3.3.7.2.1.

Formally, the study has been approved by King's College Ethics Committee (LRS-15/16-3124). The steps of the research have been planned in line with the 'informed consent' criterion of the British Psychological Association (2009). During all stages of the study, care was taken to protect the interests of the participants and to carry out the research in the most ethical way possible.

3.3.7. Quality control. Quality control mechanisms followed the recommendations made in the literature. Bryman (2006) as well as Teddlie and Tashakkori (2009) recommend using separate procedures for the different parts of the study. In order to allow drawing meta-inferences, quantitative analysis should adhere to

the criteria of reliability and validity, whereas the qualitative analysis should adhere to the criteria of credibility and trustworthiness.

3.3.7.1. Quality control for the questionnaire. Reliability refers to the issue of whether what was measured in quantitative research is reliable, that the measurement can be trusted to be correct. Validity as a quality criterion looks at whether what was measured also measures what it is supposed to measure (Kelly, 1927). In the analysis of the quantitative data of this study, reliability was assured by selecting the adequate parametric or non-parametric tests depending on the sample size and distribution as well as by explicitly testing the reliability of items and factors that emerged (Cronbach's alpha).

3.3.7.1.1. Sample size justification and power analysis. Sample size justification consists of deciding how many participants need to be in the sample in order to draw valid inferences. The sample size of this study was somehow predetermined, as only 139 persons had participated in the training courses at the time of data collection. Therefore, the sample size could not be increased. Sample size affects the kinds of statistical tests and the level of analysis that can be carried out. To account for the relatively small sample size of 62 respondents, in addition to significance levels effect sizes were also taken into consideration (Cohen, 1977). Effect size is a standardised measure of the effect of a given intervention independent of the reported significance levels and sample sizes. It is related to the power of a test. Power influences the occurrence of type I and type II errors. Type I errors occur when the null hypothesis is rejected although it is true, type II errors occur when the null hypothesis is retained although it is false. If the power of a test is too low, the probability of type II errors increases (Wilson, Van Voorhis & Morgan, 2007). Normally, the power of a test is recommended to be at least .80. (Cohen, 1988). As the sample size of this study was small and power decreases with small sample sizes, the power of the tests aimed for in this study was 0.80. In addition, only medium to large effect sizes were looked for as these were the ones that could be detected with a small sample size. Alpha error was set to 0.05 for all power analyses.

3.3.7.2. Quality control for the interview part. Three quality control mechanisms were used for the interview part: respondent validation, keeping a research memo and researcher reflexivity. With respect to respondent validation, the interviews were transcribed within 24 hours after having conducted the interview. The transcript

was sent by email to the interviewee for validation within a maximum of three days. This relatively short period of time was chosen in order to allow the participants to still remember what they had said, enabling them to amend, correct, take out or add things to the interview. Of the six interviewees, five responded to the email. One had no corrections, two had minor corrections and two interviewees deleted some phrases. No one added anything. The interviewee who did not respond had already indicated during the interview that, for time reasons, he would not send anything. For that reason, no reminder was sent. In addition I kept a research journal in which I took notes right after the interviews to record my reflections and perceptions of the interview process as well as preliminary ideas relating to the research questions.

3.3.7.2.1. Refection on positionality and researcher bias. Reflecting one's role as researcher on how one's values might have shaped the data is a further mechanism of quality control (Haynes, 2012). It is based on the idea that the researcher and what is researched influence each other mutually and continually during the research process (Alvesson & Skoldburg, 2000). Berger (2015) states, that 'researchers have to carefully self-monitor the impact of biases, beliefs and personal experiences on the research' (p. 220). In addition, when reflecting on the role of the researcher, the issue of 'positionality' has to be addressed. Being at the same time a researcher and an employee in the organization researched, may lead to potential conflicts. These may affect the people involved in the research as well as the data obtained. The next section looks at positionality first and explores the issue of researcher's bias second.

Berger (2015) distinguishes between researching the familiar, the unfamiliar and a mixed position when investigating. The 'familiar' and 'unfamiliar' positions can also be called 'insider' and 'outsider' position. Both positions are associated with advantages and disadvantages. In this study, I was clearly an 'insider' in a 'familiar' position, as I have been working for over ten years in the DGUV and the interviewees were colleagues of mine. Therefore, I had the advantages that Kacen and Chaitin (2006) describe for insiders: easy entry, knowing about the topic and understanding the terminology of the participants.

However, Kacen and Chaitin (2006) also describe that being a researcher within one´s own organization may have its pitfalls: insiders may fail to question certain rules and frameworks that may be taken for granted within the inside group. In addition, having known me for over ten years may have led the interviewees to have certain

preconceptions about my alignments and preferences (Trowler, 2008) with respect to learning facilitation. As Drever (1995) says, ‘people’s willingness to talk to you and what people say to you, is influenced by who they think you are (p. 31). Consequently, interviewees may have shaped their answers based on social desirability (Powney & Watts, 1987). In this study, interviewees might have been more cautious in voicing criticism towards learning facilitation especially if they saw me in my ‘organizational role’ as promoting methodological and didactical training of trainers. On the other hand, they may have voiced a more ‘critical stance’ than they actually had, supporting me in my role as a researcher who is looking for ‘critical voices’.

Response bias, however, is not limited to insider research (Parades, 1977; Zinn, 1979), although some authors claim that it may be stronger in insider research as there is more to lose (Schutz, 1964, Mercer, 2007). As Preedy and Richers (1988) state, interviewees may temper the ‘truth in the knowledge that fruitful professional relationships have (...) to continue after the research has been completed’ (p. 221). As interviewee bias may be present in some form or the other, special care has to be taken when analysing the data to look out for signs of social desirability - either in the direction of being more critical than expected or in being more cautious in voicing criticism.

In addition, personal anonymity becomes a more critical point in insider research. In order to protect interviewees from potential negative consequences of their participation, great care was taken to anonymise interviewees’ identities by obscuring details about them and their jobs in a way that they are not easily identifiable for other employees or management of the organization (Trowler, 2008). Anonymizing is even more important when, as in this study ‘critical views’ on institutionally set change goals are being researched.

With respect to researcher bias, it has to be noted that despite being an insider with easy means of connecting with the interviewees, there was one important aspect in which I diverged from them. As I am in favour of learning facilitation, I found myself slightly biased against the trainers critical of it. An initially unconsciously held belief, for instance, was that trainers critical of learning facilitation were not very interested in training, that they were rather amotivated trainers only fulfilling their jobs. Reanalysing the data, reflecting on my positions using the research journal and realising where the results had ‘surprised me’, helped me to discover some of my preconceptions. Also,

letting some time pass before the initial analysis of the interviews, a second and third analysis helped me to see them with a fresh eye[4].

3.3.8. Data analysis

3.3.8.1. Questionnaire. The questionnaire data were analysed using SPSS version 23. The data were first analysed descriptively. Subsequently, correlation analyses were carried out between different items of interest. As the descriptive analysis revealed different types of implementers, analyses of variances were also carried out. As the correlation analyses yielded many potentially meaningful correlations, a principal component analysis was run on the data and followed by a hierarchical multiple regression analysis. Eventually, and in addition to the parametric tests employed, a non-parametric Kruskal-Wallis test was used to identify the distribution of the various identified factors over the different groups.

3.3.8.2. Interviews

3.3.8.1.1. Open coding. Open coding (Glaser & Strauss, 1967) was chosen for the preliminary coding of the interviews. It refers to the initial interpretative process by which raw research data are first systematically analysed and categorised (Mills, Durepos, & Wiebe; 2001). Open coding consists of going through the interviews line by line, writing on the margin comments and provisional first codes related to the research questions. It was preferred to coding along preconceived categories to give space for new and unexpected topics to emerge. All the six interviews were coded in this way first. In addition, a table with the interview questions and the reduced answers of all the interviewees was generated to see the 'bigger picture' and the similarities and differences in their answers to the different questions.

3.3.8.1.2. Quote reduction. In a second step, the codes for each interviewee were collected in a table and reduced to one or two key words Mayring (2003) describes that procedure as progressive reduction from whole phrases to key sentences and codes that are subsequently further condensed into categories (Mayring, 2003, p. 73). An example

[4] In addition, the preceding intensive phase of quantitative data analysis made me approach the qualitative data initially with a somewhat quantitative lens. Getting feedback and including time lapses between the first, second and final analyses of the interviews helped me to become conscious of this and approach the data with more awareness in the subsequent analyses.

of how codes were derived from the transcripts can be found in the following table, in which two answers from the transcribed interview of Peter are shown.

Table 2. Example of the initial development of codes

Interview Transcript	**Initial open coding framework**
Interviewer: *'Do you feel want to develop further as a trainer? '*	
'*Yes, but mainly with respect to subject matter. That is, with respect to content, not so much methodologically.* *That is a point, in fact, what I do not like about seminars: The way in which we talk about subject matter knowledge and the way we talk about methods and didactics. That didactics and methods are completely overrated and that, conversely, the contents and the content knowledge are extremely undervalued. In the discussion, that we have in our training and seminar work.* *We qualify our trainers methodologically and didactically, but nobody asks, if the trainers are fit with respect to the subject matter they teach.* *And I also see that there are many trainers out there who lack the necessary content knowledge.* *With our clients here, they are all university graduates, the labour inspectors, the MSc. Students. If you want to teach them something, you have to know a lot yourself.'*	Own professional development – interest in subject matter What I don´t like: Way we talk about subject matter content Overrating of methods and didactics Sub-valuation of subject matter content Trainers qualified in methods. Subject matter – not relevant (nobody asks) Trainers lack subject matter knowledge Participants know a lot – trainers need to know a lot
Interviewer: '*What does not convince you about learning facilitation?*'	
'*Sometimes I doubt if learning facilitation is the right form for everybody. If someone comes from a polytechnic university (Fachhochschule), where everything is strictly organized and structured... People are not so fit for self-organized learning. For university graduates, that is different, they know how to do it. The others are not used to it. Which does not mean, that they cannot learn it.* *But the question is, if we are the right institution.* *We are to impart vocational knowledge here, whereas university is there to educate the whole personality.* *And to teach people scientific competencies and the ability to self-organize their learning. That, we cannot do. That is not our educational mandate. We do not begin to develop the personality of our seminar participants.* *Our mandate is clear. That is stated in §23 SGB 7, there, it is written down. We shall impart subject matter knowledge.* ' (Peter, own translation)	Not for all participants Not for all participants – if not used to self-organized learning Not the right context as institution? Educational task as DGUV – impart vocational/professional knowledge Not DGUVs legal tasks/mandate DGUV's task: impart subject matter

After the development of the initial codes, Preliminary categories were developed from the codes. This involved a re-reading of the transcribed interviews as well as a comparison across the interviews (see below). An example about how the categories were derived from the codes can be found in table 3:

Table 3. Example of developing categories from codes

Resulting preliminary category	**Initial codes**
Participants want input	Participants know a lot Participants want input Trainers lack subject matter content knowledge
Primacy of Methods	Overvaluing of methods and didactics Sub valuation of subject matter content Negative talk about subject matter knowledge Trainers qualified in methods. No one asks what the know about subject matter
Not DGUV's mandate	DGUV's task: impart subject matter Not our legal tasks/mandate Educational task as DGUV – impart vocational/professional knowledge Our institution not the right context
Self-organized learning	Not for all participants –if not used to self-organized learning
Not for all participants	Not for all participants –if not used to self-organized learning

The categories described in the table above were further informed by other interview sections as well as by the other interviewees. During the process of category development, categories were formulated and reformulated, trying to get to a precise fit between the category the content conveyed in the interviews, following the procedure of 'revising categories' proposed by Mayring (2000).

3.3.8.1.3. Analysis of the individual interviews and across interviews. First, each interview was coded on its own, thereby capturing the topics specific to each interview and to get the feel of the idiosyncrasies of each interviewee (Ayres, Kavanaugh, & Knafl, 2003; Boeije, 2002). In a second step, the interviews were analysed across cases to identify similarities as well as differences between them. The categories were further adapted and refined with the comparison across the interviews. However, while the

process of analysis was in part sequential, starting with the individual interviews and then moving on to comparing across interviews, comparing across the interviews already took place when formulating the overview table mentioned above, leading to a constant comparison.

The categories that emerged were sometimes grouped together and subsumed by a theme heading. In fact, three main themes emerged from the analysis, which were motivation', 'views on learning facilitation' and 'reasons for non-implementation/ resistance' For the themes 'motivation' and 'reasons for non-implementation/ resistance', categories were grouped into subthemes, that grouped together categories pertaining to a similar subtheme. In total, seven subthemes emerged. The totality of themes, subthemes and categories can be found in table 22 in the chapter six in the results section.

Chapter 4: Results of the questionnaire analysis

4.1 Descriptive data analysis

4.1.1. Sample characteristics. The sample consisted of 56.7% men and 43.3% women. These percentages correspond well with the general distribution of men and women in the social accident insurance. Generally, more men than women are currently involved in training of occupational health and safety topics. Due to the small sample size, the percentages given here refer to small numbers of people.

The majority of the respondents, 49 persons, were between 41 years and 60 years old (80.3%). Eight persons (13.1%) were between 31 and 40 years old; four (6.6%) were over 60 years old. None of the respondents was under 31. This is not surprising as most of the trainers in occupational health and safety study first and then work before joining the social accident insurance system, so people are usually in their mid-thirties when they take a job with the organisation. The distribution of age, therefore, broadly reflects the wider population of OSH trainers.

More than half of the trainers (56.5%) have a background in engineering or natural sciences. This is because many OSH related issues are dealt with in engineering and natural sciences. An increasing number of accident insurances now employs psychologists – either in prevention or training sections. Hence, the second largest professional group in this sample consisted of psychologists (27.4%). The remainder had backgrounds in economics (12.9%), educational science (12.9), or were trained craftsmen (3.2%) or technicians (1.6%). One third of the respondents were labour inspectors.

Over 70 % of the sample work in the system of the statutory accident insurances and its umbrella organisation (58.1% and 19.4% respectively). The other respondents come from companies, are self-employed or work at other OSH organisations. With respect to teaching time, the heterogeneity of the distribution of training tasks becomes visible. Whereas most respondents teach between 10 - 25% or 26 - 50 % of their working time, about ten percent spent over half of their time teaching and one fifth of the trainers teach less than 10% of their working time. These differences reflect the different professional tasks held by the respondents. Whereas full time trainers and experts may teach more, educational managers in upper management and labour inspectors may have more administrative duties and fewer teaching duties.

The sample consists predominantly of experienced or very experienced trainers (93.7%). The majority of the sample has between six and ten years of experience (22.7%) or over ten years of training experience (71%). Only very few trainers have little training experience (6.4%). Finally, more than half (51.7%) of the respondents have a formal trainer qualification, 48.3% do not; 25% have a formal training as coaches. Table 4 summarises the general characteristics of the sample:

Table 4. Questionnaire sample characteristics

Item	**Topics**	**Number of persons (*n*=62)**	**Percentage**
Gender	Male	34	56,7%
	Female	26	43,3%
How old are you	20–30	0	0%
	31–40	8	13,1%
	41–50	24	39,3%
	50–60	25	41%
	Over 60	4	6,6%
Professional background	Engineering and natural sciences	35	56,5%
	Psychology	17	27,4%
	Economic and social sciences	8	12,9%
	Education	8	12,9%
	Master Craftsman	2	3,2%
	Technician	1	1,6%
I work with	Statutory accident insurance	36	58,1%
	DGUV	12	19,4%
	Different OSH institution (ministry etc.)	3	4,8%
	Company	5	8,1%
	Self-employed	5	8,1%
	Other	1	1,6%
I work as	OSH expert with training duties	23	38,7%
	Labour Inspector	20	33,9%
	Statutory accident insurance employee with training duties	18	29%

Item	Topics	Number of persons (*n*=62)	Percentage
	Education Manager	5	8.1%
	Free-lance trainer	5	8.1%
	Other	3	4.8%
Experience as a trainer	<2 years	2	3.2%
	2–5 years	2	3.2%
	6–10 years	14	22.6%
	>10 years	44	71%
My work as a trainer comprises	Less than 10% of my working time	12	19.7%
	Between 10 and 25%	24	39.3%
	Between 26 and 50 %	19	31.1%
	Over 50% of my working time	6	9.8%
Expertise as a trainer	Beginner	40	3.3%
	Advanced	28	45%
	Expert	25	51.7%

To summarise, the sample is composed, mainly, of advanced to expert trainers over 40 years of age. The majority has over 10 years of training experience. Over 75% of the trainers come from DGUV and its member organisations. In addition, over 50% of the trainers in the sample are engineers or natural scientists. One third of the respondents are trained labour inspectors.

As the training within the DGUV is differently organised in each statutory accident insurance, it is difficult to say to what extent the sample here reflects the population of trainers. There are no statistical data available on all trainers giving trainings within and for the social accident insurances. On an experiential basis, it appears that with respect to age, gender, professions and years of training experience, the sample represents the population of trainers within the DGUV and its member organisations well.

Table 5 presents the characteristics of the sample with respect to learning facilitation. It shows the trainings in which the respondents have participated and the total days of training received. In addition, it also reflects the time they have been working as learning facilitators.

Table 5. Questionnaire learning facilitation

Item	Options	Number of persons	Percentage
Please rate your experience as learning facilitator	Beginner	16	26.7%
	Advanced	36	60 %
	Expert	8	13.3%
How long have you been working as a learning facilitator	Less than 12 months	8	13.1%
	Between 1–3 years	27	44.3%
	More than 3 years	21	34.4%
	I have never worked as a LF	5	8.2%
How have you trained to become a learning facilitator?	Basic Training for LF	60	96.8%
	Training in my statutory accident insurance.	13	21%
	Training Days at IAG 2012	19	30.6%
	Training Days at IAG 2014	22	35.5%
	Other	9	14.5%
How many days in total have you trained to be a learning facilitator	Less than 5 days	5	8.1%
	Between 5 and 10 days	35	56.5%
	Between 10 and 20 days	13	21%
	More than 20 days	9	14.5%

With respect to training expertise, 95% of the respondents rated themselves as being at an advanced or expert level. In contrast, only 13.3 % rate themselves as expert learning facilitators, 60% as advanced and 26.7% rate themselves as beginners. Also, they report having worked far less as learning facilitators than as trainers: Only 34.4% indicated that they have been working as learning facilitators for more than three years. The fact that respondents rate their experience and expertise as learning facilitators lower than their experience as trainers is not surprising as the educational reform

requiring the change started only six years ago. With respect to training to be a learning facilitator, 96.8% of the respondents participated in the basic training course. In addition, 91% of the trainers report that they have received additional training on top of the basic course, either in their accident insurance or in the form of conferences on the topic. The total training time in learning facilitation is quite long: One third of the sample has received over 11 days of training. Over fifty percent had trained between five to ten days. Only 8.1 % of the trainers have done the basic training course only. Therefore, most of the respondents have been trained beyond the basic course.

4.2. Results of the descriptive data analysis

4.2.1. What motivated trainers to take up learning facilitation? In the questionnaire, there was one question that asked if the respondents had already begun to implement elements of learning facilitation[5]. Fifty-five trainers said that they had started with implementation whereas seven said that they had not. On the basis of the answer to this question, trainers were divided into ‘implementers’ and ‘non-implementers’. This identification between implementers and non-implementers was therefore based on descriptive statistics rather than inferential analysis, as the differentiation between the two groups was solely done according to responses to the above-mentioned question. This section will deal with the fifty-fiver trainers (88.7 %) who have implemented elements of learning facilitation after the basic training. They will henceforth be referred to as the ‘implementers’.

4.2.1.1. Changes observed in seminars when implementing learning facilitation.

Table 6 shows the seminar changes reported by the implementers.

[5] Question 26 in the English version of the questionnaire and question 3.31. in the German version

Table 6. What changes have happened in your seminars after implementation?

Reported Change	**Mean**	**Standard Deviation**	***n***
I try out new methods in my seminars from the toolbox[6]	1.3	.60	55
I give more space for self-organised learning	1.4	.60	54
I design my seminars more openly with respect to the process of the seminar	1.7	.60	53
I leave the responsibility for the success of the learning more with the participants	1.7	.70	53
I make more room for my own self-reflection	1.7	.80	55
I give participants more room for self-reflection	1.8	.70	54
Generally, my seminars have changed a lot	1.9	.70	49

Note. 1= totally agree, 2= partly agree, 3= partially disagree, 4= totally disagree.

In general, implementers report a high degree of change in their seminars. Most report that they now try out new methods from the toolbox and that they give more space for self-organised learning. Self-reflective activities, like taking more time for self-reflection as a trainer or giving more time for it to the seminar participants were implemented to a slightly lesser extent.

4.2.1.2. Challenges encountered while implementing. Those who had implemented learning facilitation in their courses were asked about the challenges they encountered during implementation. The following challenges were mentioned:

[6]The toolbox was provided in the basic training and contained cards with learning facilitation training methods

Table 7. What challenges did you encounter when implementing learning facilitation?

Challenges	**Percentage**	***n* = 55**
Not enough time for the implementation	54.5%	30
Not enough seminars to try out implementation	34.5%	19
Not enough support from the organisation	30.9%	19
Resistance from the participants	25.5%	14
Lack of knowledge about what to do differently	10.9%	6
No challenges encountered	5.5%	3
Not convinced by the approach	1.8%	1
Others	14.5%	8

Encountering challenges during implementation seems to be a common phenomenon. Of the 55 implementing trainers, only three report not having encountered any challenges. The challenges named most frequently were organisational ones: ‘not enough time for implementation’, ‘not enough seminars to try out the approach’ and ‘lack of support from the organisation’. Resistance from participants was also mentioned, although to a lesser degree. Not being convinced of the approach was only mentioned by one person.

4.2.1.3. Motivations to continue. All but one trainer, who was dropped from the group of implementers, reported that they had continued with learning facilitation despite the challenges. Table 8 shows what motivated the remaining 54 trainers to continue:

Table 8. What motivated you to continue with implementation?

	Percentage	***n* =54**
Liking the challenge	72.2%	39
Convinced by the approach	70.4%	38
The wish to grow professionally	64.8%	35
Requirement of the organisation	13.0 %	7
New career options	5.5%	3
Other	3.7%	2

The motivations stated most frequently were that trainers liked the challenge, were convinced by the approach and that they wished to grow professionally. The trainers who implemented learning facilitation seem to be highly intrinsically motivated to overcome the challenges encountered. Similarly, elements of extrinsic motivation have also been found: Seven trainers (13%) stated that one motivation to continue with learning facilitation was that it was a 'requirement of the employer'.

4.2.1.4. Intrinsic and extrinsic motivations for implementation. The items concerning the trainers' 'motivations to continue' shown in table 8 explore different kinds of motivations. Motivation research (Deci & Ryan, 1985; Deci, Ryan, & Williams, 1996) differentiates between motivations that come from within the person and are in line with their personal goals and convictions (intrinsic motivations) and motivations that come from external requirements and are fulfilled mainly to avoid negative consequences (extrinsic motivations). The answering options 'liking the challenge', 'convinced by the approach' and the 'wish to grow professionally' may be considered as items that reflect more intrinsically inspired motivations. In contrast, the item 'requirement of the employer' reflects a more extrinsically guided motivation to continue with learning facilitation. The item 'opening 'new career options' has both aspects: a strong component of intrinsic motivation, as the person is internally motivated to advance their career. However, with respect to learning facilitation, the motivation on its own may be less 'intrinsic', as learning facilitation may be seen as a means of advancing the person´s career and not as an end in itself.

The first research questions asks what motivates trainers to take up/not take up learning facilitation. Therefore, it was explored if it made sense to divide the implementing trainers further with respect to their predominant motivation to implement. In order to do so, the combination of the responses to the five answering options mentioned above were analysed. Looking at the individual answering patterns presented in table 9, it can be seen that forty-four trainers exclusively selected answers referring to intrinsically inspired motivations to continue. Three trainers continued because they thought that this might open 'new career options' for them. As they had chosen this motivation in combination with two or all three of the intrinsic motivational answering options, which shows that they are motivated by advancing their career as well as by learning facilitation itself, these three trainers were classified as intrinsically motivated as well

Seven trainers had selected 'requirement of the employer' as a motivation to continue. Two of those had selected 'requirement of the employer' as their sole motivation to continue, four had selected 'requirement of the employer' in combination with one additional motivation (see table 9). Finally, one trainer had selected 'requirement of the employer' together with all three intrinsic motivational items. As being motivated by the 'requirement of the employer' represents the strongest external and least self-determined motivation to continue (Deci, Ryan, & Williams, 1996), all seven trainers who had selected this item in any combination were classified as 'extrinsic implementers'.

In this study, therefore, the classic intrinsic/extrinsic categorization was opted for (Deci & Ryan, 1985). Although this categorization might not capture all the nuances of some of the more recent theoretical discussions (Ryan & Deci, 2000), it was felt that due to the relatively small sample size, looking for further possible subdivisions was not advisable here. From the analysis, therefore, two differently motivated groups emerged. One group of trainers who are predominantly intrinsically motivated and a second one which is (at least somewhat) extrinsically motivated.

Table 9. Intrinsic and extrinsic motivations to continue

Response patterns of the motivations to continue	**N=54**
Intrinsic implementers	
Convinced of the approach Like the challenge Like to grow professionally	26[7]
Like the challenge Like to grow professionally	6
Like the challenge	3
Convinced of the approach Like the challenge	3
Like to grow professionally	2
Convinced of the approach	2
Convinced of the approach Like to grow professionally	2
Career development Convinced of the approach Like the challenge Like to grow professionally	2
Career development Like the challenge Like to grow professionally	1
Extrinsic Implementers	
Requirement of the employer	2
Requirement of the employer Like the challenge	2
Requirement of the employer Like to grow professionally	2
Requirement of the employer Convinced of the approach Like to Grow professionally Like the challenge	1

4.2.2. What motivated trainers to not take up learning facilitation? Seven trainers - 11.3% of the respondents - had not implemented learning facilitation when answering the questionnaire. To see if they would have liked to have started with the implementation, they were asked about it ('you have not started with learning facilitation. Would you have liked to have done so?'). Five (71.4%) answered that they would have liked to have started with implementation. One person (14.3%) said they

[7] Including two answers that had stated 'other reasons' in addition to the three motivational items.

would not have wanted to implement elements of learning facilitation in their seminars, another one (14.3%) said they were not sure. As the numbers in the group of non-implementers are quite small, absolute numbers in addition to percentages will be reported for this group.

4.2.2.1. Reasons for not taking up learning facilitation. Those who had not implemented learning facilitation indicated several reasons for non-implementation. The main reasons can be found in table 10 (multiple answers possible):

Table 10. Reasons for not taking up learning facilitation

Item	**Percentage**	***n* = 7**
Not convinced by the approach	42.9%	3
Not enough time for implementation	42.9%	3
Not enough seminars to try out implementation	28.6%	2
I think the seminar participants don't like it	14.3%	1
My work priorities are somewhere else	14.3%	1
My development interest is not in learning facilitation	14.3%	1
There was not enough support from the organisation	0.0%	0

Here too, like in the group of implementers, organisational issues were mentioned as the main reason. Interestingly, some of the organisational challenges named by the non-implementers were similar to those mentioned by the implementers (lack of time, lack of seminars, imagined resistance from participants). However, whereas the implementers carried on despite the challenges and wished for more organisational support, none of the non-implementers mentioned organisational support as an issue. Therefore, it might be hypothesised that non-implementation has to do less with organisational issues and more with a personal stance towards the approach per se. In fact, not being convinced of the approach was mentioned just as often as organisational issues as a reason for non-implementation. In the non-implementing group, three respondents said that they did not believe in learning facilitation. Thus, the group of non-implementers was far less convinced of learning facilitation than the implementers were.

4.2.2.2. Non-implementers' motivation for trying out learning facilitation. Five non-implementers said that they would have liked to implement learning facilitation, but that various factors impeded that intention. In order to find out whether the non-

implementers were driven by a negative stance towards learning facilitation or whether there were various reasons for non-implementation, these data will be examined further. As a sample size of five is too small for meaningful correlation analysis (Kirk, 2007), the individual answers of the non-implementers will be examined.

The items ‘Even if learning facilitation is required, I hold my seminars in the way I did before’ and ‘I prefer to hold my seminars in the way I did before’, which expressed a more sceptical stance towards the reform, were looked at to answer that question. The resulting picture is mixed: Three out of five said that they would like to hold their seminars as before, while two said that that was not the case. With respect to holding seminars in the old way, only one said that that they would like to do so, whereas the other four disagreed. In sum, there appear to be a variety of reasons for not implementing learning facilitation, not only not being convinced of the approach.

4.2.4. Motivations for training and professional development. When looking at the preliminary results of the descriptive data analysis, it becomes clear that implementation is strongly related to motivation. Intrinsic motivation is a strong motivator for implementation. Extrinsic motivation was also found to lead to implementation. With respect to non-implementation, the role of motivation is less clear. The next section will therefore look more deeply into the topic of motivation. Specifically, the respondents’ motivations to work as trainers, to develop professionally and to take part in the basic training will be examined. Also, the interaction of motivation with cognitive and attitudinal factors will be looked at.

In order to analyse the interactions of different motivational variables, various correlation analyses were run. Some examples of these correlation analyses can be found in annex 9. Running these analyses, it became clear that the sheer number of correlations was too vast to yield interpretable results. Therefore, a method for data reduction was sought to reduce the data to a more interpretable form. A common form of reducing data to a simpler structure is factor analysis. As the structure of the data and the factors to be extracted were not obvious, exploratory factor analysis was chosen.

4.3. Principal Components Analysis

Factor analysis allows exploring whether a set of co-varying variables can be reduced to a common dimension. Given that there was no previous hypothesis about

factors or patterns, exploratory rather than confirmatory factor analysis was used as a method here. The term ‘exploratory factor analysis’ comprises different methods for extracting factors. Costello and Osborne (2005) identify maximum likelihood method, principal axis analysis and principal components analysis as main methods. The methods differ in the way they extract the factors and in the way the extracted data can be interpreted. The aim of the first two methods is the discovery of factors that identify the latent constructs of the variables which cannot be directly measured. Principal components analysis (PCA) is a method for data reduction. Fabrigar et al. (1999) state, that the aim of principal component analysis is to ‘retain the linear combinations of the measured variables that contain as much information from the original measured variables as possible’ (p. 275). It can be used, for instance, to see if different items referring to, say, ‘intrinsic motivation’ can be reduced to that dimension. The dimension of the original items remains, only the number of items is reduced to one factor. Because of this difference of data interpretability, many authors now claim that principal component analysis (PCA) is not part of exploratory factor analysis at all but a method in its own right (Costello & Osborne, 2005; Fabrigar, Wegener, MacCallum, & Strahan, 1999).

4.3.1. Factoring methods. The main difference between exploratory factor analysis and PCA is that the former assumes that an underlying set of unobserved latent variables is expressed by the extracted factors, whereas the factors in PCA contain the same information as the individual variables with the advantage of having fewer variables than before (Velicer & Jackson, 1990). Despite these conceptual differences, in many cases PCA and methods of exploratory factor analysis yield the same or very similar results (Arrindell & van der Ende, 1985; Velicer & Jackson, 1990). As the aim of the analysis here was to explore the correlations among various variables and to derive a smaller set of variables with a common orientation, PCA was selected as the method for the analysis.

4.3.2. Prerequisites for a principal component analysis. Several prerequisites that have to be fulfilled for a PCA (Laerd Statistics, 2015). Firstly, there must be multiple variables that are measured on a continuous level. Secondly, there must be a linear relationship between all the variables. Thirdly, some of the variables should be correlated so that coherent factors can emerge. Finally, the sample size should be large enough to provide reliable estimates of correlations.

Starting with the requirement of multiple variables on a continuous level, the variables here are all Likert-scale variables. Although in theory, multiple variables measured on a continuous level are ideal for running a PCA, Lubke & Muthen (2004) have found that valid factor analysis can be carried out with Likert scale data as PCA is quite robust with respect to using ordinal data. Linearity was checked for with the inter-item correlation matrix. Variables with an item to total correlation of less than 0.5 (Kim & Stoel, 2004; Francis & White, 2002) were eliminated. The procedure of variable selection will be described in greater detail under 'sample size adequacy' below. The issue of factorability was assessed with the Kaiser-Meyer-Olkin-Measure of sampling adequacy (KMO) and with Bartlett's tests of sphericity. The KMO measures the partial correlations between pairs of items and indicates the factorability of the items. In this study, the KMO for the entire data set was 0.7. According to Kaiser and Rice's (1974) criterion of sampling adequacy, a KMO of .70 lies in the upper spectrum (middling). All calculations can be found in annex 9.

Table 11. Kaiser and Rice's (1974) criteria on sampling adequacy

KMO	**Adequacy of the Data**
>0.90	marvellous
0.80–0.90	meritorious
0.70–0.79	middling
0.60–0.69	mediocre
0.50–0.59	miserable
<0.50	unacceptable

More recently authors recommend a minimum of 0.5 (Cleff, 2015; Field, 2013; Hartas, 2010) or a minimum of 0.6 (Möhring & Schlütz, 2013; Tabachnick & Fidell, 2013). Taking together the different recommendations, a KMO of 0.7 for the partial correlations of the data can be considered satisfactory for carrying out a PCA.

Finally, sample size adequacy for carrying out a PCA will be looked at. Generally, PCA is used for large samples. The larger the sample size, the more replicable or generalizable are the results (Costello & Osborne, 2005). However, a PCA can be carried out with a sample size as low as 60, if the variables load strongly on one factor and if the variables have high communalities (MacCallum, Widman, Zhang, & Hong, 1999). Communality is a measure of how well extracted factors explain the

variance of the variables. The square of the correlation of one variable with one factor indicates a part of the variance accounted for by that factor. The sum of these squares for all factors is the communality or the explained variance for that variable. MacCallum et al. (1999) state that a sample size of 60 can be sufficient if the communalities of the items are at least .60. Bühner (2006) gives the same criterion for samples in which n = 60. Other authors hold that a PCA can be run on even smaller samples if at least four variables load over .60 on each relevant factor or if more than 10 variables load over .40 on each factor (Guadagnoli & Velicer, 1988). The sample size in this study is 62. Therefore, a PCA can be carried out legitimately if the communalities of the individual items are above .60 or if the criteria described by Guadagnoli & Velicer (1988) are met.

4.3.3. Subjects to items ratio

In addition to sample sizes and communalities, the issue of how subjects-to-item ratios influence the results of factor analyses have been discussed in the methodological literature. Rules of how many subjects are required for each variable range from 3:1 (Cattell, 1978), 5:1 (Gorsuch, 1983), 10:1 (Everitt, 1975) up to 20:1 (Hair, Anderson, Tatham & Black, 1999). As in this study, the sample size was 62 and there were 26 variables before variable elimination, the subject-to-item ration is 2:1 With respect to the ratios suggested above, this is a very low subject-to-variable ratio.

Recently, however, researchers have moved away from rule of thumb recommendations of ideal subject-to-item ratios (Hogarthy, 2005; Osborne & Costello, 2004; Field, 2009), as there seems to be a complex interplay between the subject-to-item-ratio, sample size and component loadings. Osborne & Costello (2004) analysed the relative contribution of each of the three parameters under varying conditions. In a Monte Carlo study, they looked at how the relative contribution of each parameter affected the following factors: g^2 (the comparison between the sample component pattern and the population component pattern), type I errors, and type II errors.

The authors found that as the subject-to-item ratio increased, g^2 discrepancy decreased, the probability of type I errors decreased and the probability of getting to a correct component pattern matrix increased (p. 7). When looking at the interaction between subject-to-item ratio and sample size, they found that

> while increasing ratios of subjects to variables was generally related to more favourable outcomes (lower g^2, higher kappa, and lower Type I and Type II error rates), as N increased, this effect became less important
> (p. 7).

Consequently, the subject-to-item ratio has a larger effect in the direction described above when the sample size is small. As in this study, the sample size is indeed small and the subject-to-item ratio is low, one would expect difficulties with respect to generalizability (g^2) and with getting to the correct pattern component matrix. Consequently, missing variables that should be included or not including variables that should be in the final factor solution would be an issue of concern, as the aim of PCA is that the extracted factors correctly reflect the underlying dimensions.

In addition to the interrelationship between subject-to-item ratio and sample size, Osborne and Costello (2004) also looked at the contribution of component loadings to the goodness of a PCA solution. In the data set of this study, items load highly on the individual factors. The average loading for the retained items is .082. Five items load above .9, six items load above .8, five items load above .7 and only one item loads above .5. In addition, there is a clear simple structure, i.e. only two items cross load on two factors. Looking at the contribution of component loadings, the authors found that 'item loading magnitude (…) was the strongest predictor of congruence between population and sample results (g^2). Specifically, as item loading increased, average g^2 decreased, (…) Type II errors decreased, and the odds of getting the correct component pattern increased dramatically' (p. 4). The effects of high item loadings were stronger with small sample sizes, like in this study, and decreased with growing sample sizes. A similar finding holds true for the relationship between item loadings and subject-to-item ratios: Osborn and Costello (2004) found that the 'subject-to-variable ratio had larger effects when the component loadings were smaller' (p. 7).

Taken together, the findings suggest that high component loadings can partly counterbalance the effects produced by small sample size and low subject-to-item ratios. With respect to both sample size and subject-to-items ratio, this sample is at the lower end of qualifying for a PCA. What saves it, to a certain extent, are its high item loadings. However, when looking at the results of the PCA presented further down, one has to keep in mind the potential limitations emerging from the interaction of the three parameters discussed in this section.

4.3.4. Variable selection. The variables included in the PCA were chosen with respect to the content and the structure of the item. Concerning the content, all variables that described participants' opinions and beliefs, attitudes and knowledge about learning facilitation were included along with the items concerning the basic training course. Items concerning trainers' motivations to work and to develop professionally were also included. Not included were items of a more independent nature, such as biographical data or participants' professional backgrounds. With respect to item structure, only items that could have been answered by all participants were included.

According to the criteria specified above, the following 26 variables were selected:

Items selected for inclusion in the PCA

Motivation to work as a trainer: I like to impart subject matter knowledge
Motivation to work as a trainer: I like to facilitate the learning processes
Motivation to work as a trainer: I like to interchange with seminar participants
Motivation to work as a trainer: I mainly give seminars because it is a part of my professional duties
Motivation to work as a trainer: I like to develop professionally
Motivation for BT: to receive a certificate
Motivation for BT: exchange with other participants
Motivation for BT: to get to know new training methods
Motivation for BT: interested in the topic
Motivation for BT: requirement of the employer
Motivation for CPD: open career options
Motivation CPD: exchange with other participants
Motivation CPD: get to know didactic innovations
Motivation for CPD: requirement of the employer
Motivation for CPD: expand my subject matter knowledge
Before the first seminar on learning facilitation, my attitude towards learning facilitation was positive
After the basic qualification, my attitude towards learning facilitation was positive
After the first implementation trials, my attitude towards learning facilitation was positive
Today, my attitude towards learning facilitation is positive
I am very convinced of learning facilitation
How much do you know about: enabling didactics
How much do you know about: constructivism
How much do you know about: learning facilitation
How much do you know about: KoSiG (Competence Education in occupational health and safety)
Generally, my seminars have changed a lot
My attitude in trainings has changed a lot

4.3.5. Variable elimination. In order to only include variables in the PCA that highly correlate, the inter-item correlation matrix was calculated. Items that had an item-to-total correlation of less than 0.5 (Francis & White, 2002; Kim & Stoel, 2004) were eliminated. With this criterion, the following seven variables were eliminated, leaving a total of 19 variables:

Motivation to work as a trainer: I like to facilitate the learning processes
Motivation to work as a trainer: I mainly give seminars because it is a part of my professional duties
Motivation to work as a trainer: I like to develop professionally
Motivation for the Basic Training: to receive a certificate
Motivation for CPD: open career options
How much do you know about: KoSiG (Competence Education in occupational health and safety)
Before the first seminar on learning facilitation, my attitude towards learning facilitation was positive

Two further variables, although having correlations higher than 0.5, were also eliminated as they loaded highly (i.e., above .35) with a difference of less than 0.1 on two factors. These variables are:

Generally, my seminars have changed a lot
My attitude in trainings has changed a lot

In total, therefore, 17 items remained for the PCA.

4.3.6. Rotation method. In order to get to a clearer factor structure, different rotation techniques are used. Rotation can be either orthogonal or oblique. Orthogonal rotations 'constrain factors to be uncorrelated' (Fabrigar, MacCallum, Wegener, & Strahan, 1999, p. 281) and oblique rotations 'permit correlations among factors' (p. 281). Some authors prefer orthogonal rotations because of their 'conceptual clarity' (Bortz, 2006; Nunally, 1978), whilst others claim that orthogonal rotations restrict the analysis unnecessarily. Costello and Osborne (2005) state, for instance:

> In the social sciences we generally expect some correlation among factors, since behaviour is rarely partitioned into neatly packaged units that function independently of one another. Therefore, using orthogonal rotation results in a loss of valuable information if the factors are correlated, and oblique rotation should theoretically render a more accurate and perhaps more reproducible, solution. If the factors are truly uncorrelated, orthogonal and oblique rotation produce nearly identical results. (p. 3)

In this study, therefore, oblique rotation was selected in order to allow for factors to be correlated and to not impose the 'restriction of uncorrelated factors' (Fabrigar et al., 1999, p. 282; Bühner, 2006). For the analysis, a promax rotation with kappa 4 was chosen (Eckey, Kosfeld, & Rengers, 2002; Hendrikson & White, 1964). A promax rotation avoids extremes, that is neither very high nor very low loadings are obtained, which makes interpretation easier.

4.3.7. Extraction method.

How many factors to extract from a PCA has been an ongoing discussion in methodological research (Velicer, 1976; Fava & Velicer, 1992, Gorsuch, 1988). Thompson & Daniel (1996), Costello and Osborne (2005) as well as Fabrigar, Wegener, MacCallum and Strahan (1999) recommend combining several extraction criteria and selecting various factor solutions first before deciding on a final one. The final decision should be based on the best fit between 'statistical considerations and substantive interpretations' (Yang, 2005, p. 192). The next section presents the main methods for factor extraction as well as factor solutions for this study derived from these methods.

4.3.7.1. Scree plot. One method for factor extraction is the scree plot (Cattell, 1966). It consists of plotting the eigenvalues against the number of factors in their order of extraction. The point in the graph where there is an abrupt drop of the slope is identified and factors that lie above this point are extracted. As eigenvalues represent the variance explained by a factor (Field, 2009), the higher the eigenvalue, the more of the variance is explained by it. Therefore, high eigenvalues indicate the relative importance of a factor. Costello and Osborne (2005) describe the scree plot as good method to get to the number of factors if it is used together with additional methods. Similarly, researchers such as Field (2009) and Patil (2008) suggest complementing the scree plot with other methods, rather than using it on its own.

The use of scree plots has been criticized on the basis of subjectivity of interpretation, for example when there are several drops in the slope or none at all (Velicer, 2000). This criticism, however, does not apply to the scree plot in this study. As can be seen in the figure 2, there is one clear drop in slope after three factors. Using the scree plot as an extraction criterion in this study would therefore lead to a three-factor solution, consisting of the first three factors shown below.

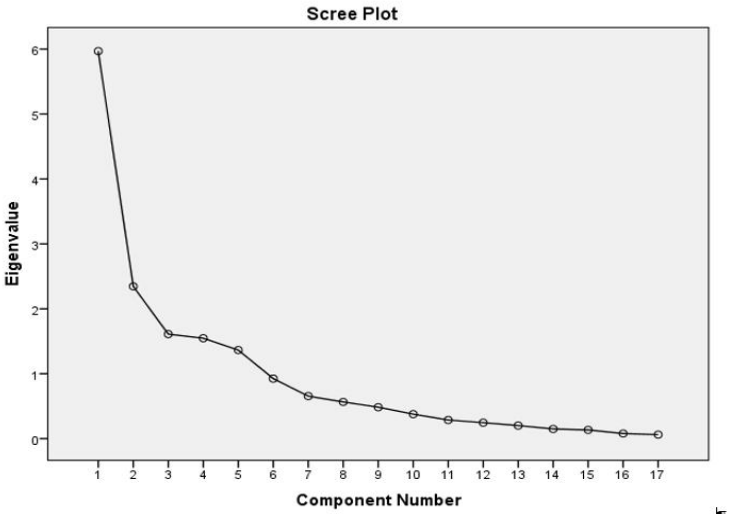

Figure 2: Scree plot

With respect to the criterion of 'meaningful interpretation of the factors extracted' (Field, 2009, p. 641), it seems that factors two and three of this solution can be easily interpreted. Looking at the third factor first, it comprises the following variables:

Motivation for professional development: exchange with other participants

Motivation to give seminars: I like to interchange with seminar participants

Motivation for the basic training: Exchange with other participants.

These variables can easily be reduced to a factor dealing with *exchange* as a motivation. Similarly, the second factor also comprises related variables:

I know a lot about enabling didactics

I know a lot about learning facilitation

I know a lot about constructivism

The combination of these variables might lead to a common underlying dimension related to knowledge about the theoretical underpinnings of the educational change. The first extracted factor, however, is more difficult to interpret. The factor groups together items relating to attitude as well as items related to being motivated by learning about new didactic methods:

Attitude

After the basic training, my attitude towards learning facilitation was positive

After the first implementation trial, my attitude towards learning facilitation was positive

Today, my attitude towards learning facilitation is positive

I am very convinced of learning facilitation

Motivation

Motivation for continuous professional development: Interest in didactic innovation

Motivation to participate in the basic training: Interest in the topic

The first factor seems somehow 'muddled', grouping together issues of attitude as well as motivations. Rather than variables that can be reduced to a common dimension, which is the rationale of PCA, this factor appears to reveal an underlying construct that includes attitudes as well as motivations. Therefore, although the scree test is generally a good factor extraction option with respect to the recommendations found in the methodological literature, the resulting factor structure in this specific case poses the difficulty that the first factor is not meaningfully reducible to one underlying dimension.

4.3.7.2. Kaiser criterion - Eigenvalues > 1. Another criterion for factor extraction is the Kaiser criterion (Kaiser, 1960). It holds that all factors with eigenvalues bigger than one should be retained. The rationale behind this method is to retain the eigenvalues that explain an important amount of the variance. The difference with respect to the scree test is that the extraction criteria is not a point in the slope but that it is defined by the magnitude of the eigenvalue, which should be bigger than one. This extraction criterion is a commonly used one for factor extraction and is often set as a default setting in statistical programs, such as SPSS.

Velicer (2000) as well as Field (2009) point out that the Kaiser criterion may lead to an overextraction of factors. However, Field (2009) concedes that using the Kaiser criterion may be valid when the number of variables is less than 30 and the communalities after extraction are all higher than 0.7 (p. 641). In this sample, the number of variables was 26 that is less than 30. The communalities after extraction were over .7 for 19 items. Five items had communalities of 0.62 or above, that is, they lay only slightly below the criterion suggested by Field (2009) for the adequate use of the

Kaiser criterion without risking overextraction. Applied to this study, the Kaiser criterion yields a five-factor solution, shown in figure 2. Whereas the first three factors are the same as the ones identified with the scree test, an additional fourth and the fifth factor emerge when applying the Kaiser criterion.

The fourth factor comprises two items:

Motivation for continued professional development: Requirement of the employer

Motivation to participate in the basic training: Requirement of the employer

The underlying dimension of being motivated by the requirement of the employer can be detected. The fifth factor comprises items related to subject matter knowledge:

Motivation to give seminars: I like to impart subject matter

Motivation for continuous professional development: To expand my subject matter knowledge

Here, the reduction onto a common factor related to 'motivated by subject matter' can be clearly detected. The two additional factors can be easily interpreted and reduced to a common dimension. What has still not been resolved, however, is the unclear nature of the first factor, which seems to represent rather an underlying construct with at least two underlying dimensions.

4.3.2.3. Set to-be-extracted factors to six. In an attempt to get to a more interpretable first factor, setting the factors to six was tried out. In fact, when PCA was run with setting the number of factors to be extracted to six, a more interpretable factor structure appeared. As can be seen the pattern matrix on page 231 in annex 9, items related to attitude now load on factor one, items related to knowledge load on factor two, items related to social exchange load on factor three. Variables related to the motivation to learn about new methods, that formerly loaded together with the items on attitude on factor one, now load on a separate fourth factor. Factors five and six comprise items related to the 'requirement of the employer' and 'subject matter' respectively. Therefore, setting the factors to six makes yields a clear factor structure which is easily interpretable.

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The decision to set the factors to six was not arbitrary but based on empirical research reviewed in the literature. As none of the two previous factor solutions had been entirely satisfactory with respect to the criteria of interpretability (Yang, 2005) of the first factor, a study by Rzejak et al. (2014) on teachers' motivation to participate in continued professional development was reconsidered. The authors had identified four motivational factors with exploratory factor analysis that they termed 'oriented towards social interaction', 'adaption to external expectation', 'development oriented' and 'career oriented'. The factor 'development orientated' corresponds partly to being motivated by new teaching methods. In addition, Boege (2015) found that 'being interested in new teaching methods' was a motivation for trainers who had changed towards learning facilitation.

Therefore, there was empirical support for the idea of singling out `new methods` as a separate factor from 'attitudes' In addition, the research by Rzejak et al. (2014) also supports the fifth factor 'requirement of the employer`, as it is similar to their motivational factor 'adaption to external expectation'. Following this line of argumentation, the potential criticism of overextraction of factors can be countered as previous research has identified some of the factors which appear in the six factor solution[8].

4.3.2.4. Factor extraction – best fit. To summarize, three different solutions have come out of the analyses: A three-factor solution based on the scree test, a five-factor solution based on the Kaiser criterion and a third solution based on pre-setting the factors to six, resulting from the analyses of the first two extraction solutions and subsequent considerations of the literature. Based on statistical criteria alone, one would probably select the most parsimonious three-factor solution as it is recommended by leading researchers in the field and reduces the possibility of over extracting factors (Field, 2009; Patil, 2008). Alternatively, one could select the five-factor solution if one accepts that Field's (2009) criteria for using the eigenvalue criterion is nearly met with this sample (see above).

However, none of the two solutions resolves the issue of the unclear first factor. Considering the criterion of extracting meaningful dimensions (Field, 2009; Yang,

[8] Whereas three of the factors (new methods, requirement of the employer, exchange) are similar to those reported by Rzejak et al. (2014), the three remaining factors (attitude, knowledge and subject matter) are new. However, one has to be careful not to equate Rzejak's factors with the ones found in this study, as the items used to identify them were different.

2005), both solutions are wanting. Field recommends considering previous empirical research in the field when taking the final decision on the number of factors (Field, 2009). In this respect, the six-factor solution appears to be the best option. It not only shows an interpretable structure with clear underlying dimensions, but three of the motivational factors that were extracted are also supported by previous empirical research. Therefore, the six-factor solution was finally decided upon in this study. The results of the six-factor PCA can be seen in table 12.

Table 12. Results of the PCA

	Factors					
Items	*1*	*2*	*3*	*4*	*5*	*6*
I am very convinced of learning facilitation	.921					
After the first implementation trials, my attitude towards learning facilitation was positive	.880					
Today, my attitude towards learning facilitation is positive	.860					
After the basic qualification, my attitude towards learning facilitation was positive	.824					
Enabling Didactics		.931				
Constructivism		.819				
Learning Facilitation		.794				
Motivation CPD: exchange with other participants			.906			
I like to interchange with seminar participants			.751			
Motivation BT: exchange with other participants			.723			
Motivation for BT: to get to know new training methods				.927		
Motivation for BT: interested in the topic				.734		
Motivation CPD: get to know didactic innovations				.525		
Motivation for CPD: requirement of the employer					.845	
Motivation for BT: requirement of the employer					.769	
Motivation for CPD: expand my subject matter knowledge						.912
I like to impart subject matter knowledge						.822

Note. Extraction method: Principal Component Analysis. Rotation method: Promax (kappa = 4) with Kaiser normalisation. Cut-off = 0.50. Factors: (1) Attitude, (2) Knowledge, (3) Exchange, (4) Methods, (5) Requirement of employer, (6) Subject matter

The data from the 17 items yielded six factors that accounted for 81% of the variance. Sixteen of the 17 items had high communalities of over 0.7. One item (motivation for CPD: Get to know didactic innovations) loaded slightly below 0.6 (.525). However, as five items loaded above .9, six items above .8 and five items above .7, the sample size was considered sufficient with respect to the criteria of sample size adequacy by MacCallum et al. (1999) referred to earlier. Table 13 shows the results of the PCA with the explained variance, the cumulative variance and the communalities.

Table 13. PCA: Variance explained, cumulative variance and communalities

No	Factor name	Variance explained	Variance cumulative	Items	Item loading	Communalities
1	Attitude	35.1	35.1	Today, my attitude towards learning facilitation is positive	.860	.873
				After the first implementation trials in my seminars, my attitude towards learning facilitation was positive	.880	.882
				After the basic qualification, my attitude towards learning facilitation was positive	.824	.840
				I am very convinced of learning facilitation	.921	.823
2	Knowledge	13.8	48.9	Learning Facilitation	.794	.795
				Enabling Didactics	.931	.890
				Constructivism	.819	.733
3	Motivation: Exchange	9.5	58.3	I like to exchange with seminar participants	.751	.712
				Motivation BT: exchange with other participants	.723	.793
				Motivation CPD: exchange with other participants	.906	.814
4	Motivation: Methods	9.1	67.5	Motivation for BT: To get to know new training methods	.927	.887
				Motivation for BT: Interested in the topic	.734	.810
				Motivation CPD: get to know didactic innovations	.525	.689
5	Motivation: Requirement of the Employer	8.0	75.5	Motivation for BT: requirement of the employer	.769	.785
				Motivation for CPD: requirement of the employer	.845	.785
6	Motivation Subject Matter	5.4	81.0	Motivation for CPD: expand my subject matter knowledge	.912	.844
				I like to impart subject matter knowledge	.822	.805

The first two factors, attitude towards learning facilitation and knowledge about learning facilitation account for 48.9% of the variance.

4.3.8. Internal consistency. Each identified factor was assessed for internal consistency calculating Cronbach's alpha (Cronbach, 1951). Table 14 shows the results:

Table 14. Internal consistency for the identified factors

Factor	**Number of items**	**Item means**	**Internal consistency**
Attitude	4	1.64	.916
Knowledge	3	2.02	.816
Motivation Exchange	3	1.55	.713
Motivation Methods	3	1.25	.824
Motivation Requirement Employer	2	2.60	.691
Motivation Subject Matter	2	1.48	.685

Cronbach's alpha coefficients of the factors 'attitude', 'knowledge', motivation 'exchange' and 'methods' are above the $\alpha \geq 0.7$ criterion for minimum reliability (Cronbach, 1951; Spector, 1992). As the internal consistency of the factors 'requirement of the employer' and 'subject matter' lay below the cut-off point of .7, the possibility of including further items was explored as a strategy for improving internal consistency (Prior, Ramsey, & Burr, 2013). However, as there were no more items relating to the two dimensions, it was decided to keep the two factors, especially because both alphas were only slightly below the cut-off point. In addition, considering their content, it made sense to group the items together. The detailed calculation can be found in annex 9.

4.3.9. Calculation of the factor scores. The items identified by PCA for the different factors were analysed further in order to yield the corresponding factor scores. Factor scores are the composite scores for each participant on each factor. They can be calculated by working with the raw scores or with standardised z-scores. Z-scores are recommended when the variables have very different means and standard deviations and when item responses are differently scaled, whereas raw scores work well when means, standard deviation and the item response scale are similar. As the response scale for all items were four-point Likert scales, raw scores were taken to calculate the factor scores. Factor scores were obtained by calculating the mean of the individual items

constituting each factor for each participant. Table 15 shows the means, standard deviation and variance for each factor:

Table 15. Factor means, standard deviations and variances

Factor	Number of items	Factor Mean	Standard Deviation	Variance
Attitude	4	6.57	2.76	7.60
Knowledge	3	6.07	1.87	3.51
Motivation Exchange	3	4.66	1.70	2.90
Motivation Methods	3	3.76	1.58	2.50
Motivation Requirement Employer	2	5.21	1.97	3.89
Motivation Subject Matter	2	2.97	1.13	1.29

4.3.10. Implementation. The factors identified by principal component analysis can be summarised as relating to attitude, knowledge and four different types of motivation. With respect to the first research question – what motivated trainers to take up/not take up learning facilitation – uptake was defined as the implementation of elements of learning facilitation in the trainers' seminars. Therefore, it is important to know how, if at all, the identified factors affect the implementation of the educational innovation. An item 'implementation' was therefore created from the following three items:

Table 16. Items forming the variable 'implementation'

Questionnaire item
I always try to improve as a learning facilitator
Even if learning facilitation is required, I hold my seminars in the same way as I did before
I prefer to hold my seminar in the same way as I did before the implementation of learning facilitation

The last two variables were originally inversely coded and then recoded to match the scales' direction. As the original items ranged from 1 to 4 on the Likert scale, the new aggregated variable ranged from 3 (high intention to implement) to 12 (no intention to implement). Aggregation of the different items was done to get a variable that combined the information of the three variables related to implementation. In order to see to if the factors identified in the PCA had an effect on implementation, a multiple regression analysis was carried out.

4.4. Multiple regression analysis

4.4.1. Selection and entry of variables. The objective of multiple regression analysis is explanation and/or prediction (Eid, Gollwitzer, & Schmitt, 2015; Keith, 2015). Here, multiple regression analysis is used to analyse if any of the demographic variables of gender and age or one of the six factors identified by PCA serves to predict implementation of learning facilitation.

In the literature on multiple regression analysis, there is an ongoing discussion about the most appropriate way for entering independent variables. Some authors suggest that for an exploratory data analysis or for the selection of variables from a bigger set of variables, stepwise methods are most adequate (Eid et al., 2015; Olejnik, Mills, & Keselman 2010). Some authors suggest using stepwise regression analysis when the issues at stake are more exploratory and their interdependencies are not well known. This is sometimes contrasted with hierarchical regression analysis, which is recommended when there is a body of pre-existing literature suggesting a specific ordering of the variables (Keith, 2015; Lewis, 2007). Variables that are known to account for some of the variance in the dependent variable are entered first, followed by the variables whose contribution one wants to assess (Olejnik et al., 2010). Despite the appealing nature of an automated variable selection provided by stepwise regression, a growing body of research has pointed out the risks associated with it. Among these is the increase of the probability of type I errors (Mundry & Nunn, 2009), problems with the calculation of degrees of freedom (Thomson, 1995) and problems with replicability (Lewis, 2009). Therefore, a simultaneous entering method in which all variables are analysed at the same time was chosen for the multiple regression analysis. As there was no hierarchical ordering of the variables, a one-step model was used.

In addition to the six variables identified by PCA, the variables age and gender were included in the analysis to assess their effect on implementation. As their role in implementation is not clear, they were added simultaneously with the other variables. Originally, the demographic variables to be included in the multiple regression analysis were age, gender and years of training experience. However, as correlation analysis showed that age and years of training experience were highly positively correlated with $r(59) = .373^{**}$, $p < 0.01$, only the variable ‘age’ was included. Owing to the strong correlation, it is assumed that age reflects years of training experience well.

4.4.2. Power. The sample of this study is relatively small. As the power of multiple regression analysis is determined by the sample size as well as by the predictors fed into the model, it was assumed that adding all eight predictor variables - the six variables from the PCA and the two demographic variables - would reduce the power below the selected and recommended criterion of 0.80 (Cohen, 1988). In fact, a calculation with G*Power (Faul, Erdfelder, Buchner, & Lang, 2007) showed that with eight variables, the sample size required to yield the minimum power of .80 was $n = 52$. As there were only 44 trainers in the sample, it was not large enough to yield the desired power of 0.80. Therefore, a Pearson's correlation analysis was run to see which factors and variables correlated significantly with implementation. In order to reduce predictor variables, only those that correlated highly with 'implementation' were to be included in the multiple regression analysis.

4.4.2.1. Results of the correlation analysis. Attitude, r(50) = .677, p = .000, new methods r(50) = .628, p = .000**, and extrinsic motivation, r(51) = -.485, p = .000**, correlated significantly with implementation at the p = .001 significance level. 'Knowledge', r(52) = .305, p = .025*, and 'age', r(53) = -.324, p = .016*, correlated at the p = .05 significance level. No significant relationships were found for 'gender', r(52) = .251, p = 0.68, 'subject matter', r(52) = -.042, p = -.762, and 'exchange', r(50) = .206, p = .143. Therefore, 'age', 'attitude', 'new methods', 'extrinsic motivation' and 'knowledge' were selected for inclusion in the multiple regression analysis. An a priori power analysis with G*Power showed that to yield a power of 0.80 and to discover large effect sizes of f2 = 0.35, a sample size of at least 43 was needed. As the sample size was 44 in the multiple regression analysis with five predictor variables, it was big enough to run the test and yield the power and the effect size aimed for.

4.4.3. Results of the multiple regression analysis. Table 17 shows the unstandardised coefficients and the significance of the Beta standardised coefficients. It can be seen that the partial contributions of the variable 'age' and the factor 'attitude' are statistically significant at p = .048 and p = 0.001 respectively. The partial contributions of the other factors on the prediction of implementation are not significant.

Table 17. Summary of the Multiple Regression Analysis

Variable	*B*	*SEB*	β	t	p values
Constant	5.211	1.243		4.94	
Age	-.479	.234	-.222	-2.043	**.048***
Attitude	1.196	.334	.497	3.584	**.001****
Knowledge	.167	.317	.062	.527	.601
Extrinsic	.290	.499	.086	.581	.565
New Methods	-.361	.205	-.203	-1.760	.087

Note: N=46, *p<.05; **p<.001, *B* = unstandardised regression coefficient, *SEB*= standard error of the coefficient*;* β= standardised coefficient

The multiple regression model predicts statistically significant implementation with $F(5, 38) = 11.292$, $p < .0001$, $R^2 = .598$; adjusted $R^2 = .545$. All factors together account for 54.5% of the variance of the dependent variable 'implementation intention'. The variable 'attitude' contributed statistically significantly to the prediction with $p < .001$. The variable 'age' added statistically significantly to the model with $p = .048$. Partial regression plots and a plot of studentised residuals against the predicted values assessed linearity. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.902. No evidence of multicollinearity was found, as there were no VIF values greater than 10 and no outliers. The assumption of normality was met, as assessed by a histogram and a P-P Plot. All calculations and plots can be found in the Annex 9. Having a positive attitude towards learning facilitation, therefore, contributes significantly to implementation. In addition, being older as a trainer also predicts implementation. As will be remembered, the aggregated variable 'implementation' ranged from 3 (high degree of implementation) to 12 (no intention to implement), whereas age was coded from 1 = 20 - 30, to 2 = 31 - 40 to 5 = over 60. Therefore, being older as trainers increased the probability of implementation.

The results of the multiple regression analysis suggest that a positive attitude and older age significantly predict implementation of learning facilitation. Expressed with the standardised beta, the results show that for each unit increase in attitude, there is half a unit increase in implementation. In addition, the older the trainers, the more likely they are to implement elements of learning facilitation.

The results are plausible. If someone's attitude towards an educational innovation is positive, it is likely that their intention to implement will be high. With respect to age, the results seem to go in the direction suggested by various developmental models of trainer/teacher development, that older trainers are more willing to implement educational innovation than younger ones. More detailed analyses are required to interpret this finding further. Finally, it is hypothesised that smaller effects, such as the influence of those factors that correlated highly with implementation but failed to reach significance, would perhaps show with a larger sample.

4.5. Analysis of the differences between the three implementer groups

Multiple regression analysis showed that 'attitude' and 'age' significantly predict implementation. In this section, the relationship between the three implementer groups, and the six factors identified by PCA shall be examined. In addition, the relationship between the implementer groups and 'implementation' and 'age' will be explored. Finally, the issue of how the attitude of different groups has changed over time, will be looked at.

To analyse the differences between implementer groups, the non-parametric Kruskal-Wallis test was chosen. The assumptions for an ANOVA were not met: First, the three groups are highly unequal in terms of sample size (N = 47, N = 7, N = 8). Second, the variables were not normally distributed and third, there were outliers (Eid, Gollwitzer & Schmidt, 2013). The assumptions for the Kruskal-Wallis test were all met except for the fact that the shapes of the distributions of the different variables were not equal (Kruskal & Wallis, 1956). Therefore, rather than differences in the medians, differences in the mean ranks will be reported (Eid et al., 2013). The Kruskal-Wallis test was employed to look for differences between the three implementer groups with respect to the six factors identified by PCA as well as for differences in implementation. Table 18 shows the results:

Table 18. Results of the independent-samples Kruskal-Wallis test

Null Hypothesis	Sig.	Decision
The distribution of **F1_Attitude** is the same across categories of implementers	.001	Reject the null hypothesis
The distribution of **F2_Knowledge** is the same across categories of implementers	.244	Retain the null hypothesis
The distribution of **F3_ Exchange** is the same across categories of implementers	.759	Retain the null hypothesis
The distribution of **F4_NewMethods** is the same across categories of implementers	.027	Reject the null hypothesis
The distribution of **F5_Extrinsic** is the same across categories of implementers	.007	Reject the null hypothesis
The distribution of **F6_SubjectMatter** is the same across categories of implementers	.624	Retain the null hypothesis
The distribution of **implementation** is the same across categories of implementers	.006	Reject the null hypothesis

Note. The significance level is .05

Significant differences with $p < .05$ were found with respect to attitude, new methods, implementation and extrinsic motivation to develop professionally. Pairwise comparisons between the groups showed that all significant differences were between the intrinsic implementers and the non-implementers.

4.5.1. Implementation. The Kruskal-Wallis test was used to determine whether there were differences in implementation in the three groups. Implementation scores differed significantly between the groups with $\chi 2\ (2) = 10.102$, $p = .006$. Pairwise comparisons revealed a significant difference between the intrinsic implementers (mean rank = 25.77) and the non-implementers (mean rank = 45.13) ($p = .005$) with respect to implementation. The calculations can be found in annex 9. Interestingly, the mean ranks of the intrinsic implementers and the extrinsic implementers hardly vary. With respect to the degree of implementation, therefore, there is not much difference between the intrinsic and the extrinsic implementers.

4.5.2. Attitude. The factor attitude yielded a statistically significant difference between the three implementing groups with $\chi 2(2) = 14.859$, $p = .001$. The pairwise comparisons revealed a significant difference between the intrinsic implementers (mean rank = 24.16) and the non-implementers (mean rank = 47.17) ($p = .002$) with respect to implementation. There were no significant differences found with these two groups and the extrinsic implementers (mean rank = 39.14). As previously mentioned, lower values correspond to a more positive attitude. This result is in line with what is expected from the results of the multiple regression analysis reported earlier, which is that attitude predicts implementation.

4.5.3. Knowledge. With respect to knowledge, implementer groups do not differ. The Kruskal-Wallis test resulted in $\chi 2(2) = 2.823$, $p = 0.244$. Interestingly, although this is not a significant result, the extrinsic implementers (mean rank = 21.52) knew most about learning facilitation and constructivism, followed by the intrinsic implementers (mean rank = 30.24) and the non-implementers (mean rank = 36.06). For this variable, too, lower values correspond to higher knowledge.

4.5.4. Exchange. Exchange was found to not have significant differences in the three implementer groups with $\chi 2(2) = .552$, $P = .759$. Intrinsic implementers (mean rank = 28.95), extrinsic implementers (mean rank = 28.36) and non-implementers (mean rank = 33.44) are similarly motivated to have exchanges with seminar participants.

4.5.5. New methods. With respect to new methods, significant differences were found with $\chi^2(2) = 7.234$, $p = .027$. Intrinsic implementers (mean rank = 27.19) differed significantly from non-implementers (mean rank = 41.44) ($p = 0.22$). Extrinsic implementers (mean rank = 30.50) did not differ significantly from either of the two other groups. The implementing group is significantly more motivated by learning about new methods than the non-implementing group. For this variable as well, lower values represent higher motivation.

4.5.6. Extrinsic motivation. As would be expected, there were differences between implementer groups with respect to extrinsic motivation with $\chi^2(2) = 9.828$, $p = .007$. Intrinsic implementers (mean rank = 33.4) differed significantly from non-implementers (mean rank = 15.00) ($p = 0.12$). Extrinsic implementers (mean rank = 22.14) were not significantly different from either of the other two groups. The intrinsic

implementers are least motivated to develop professionally by the requirements of the employer. The extrinsic implementers are slightly more motivated by the requirements of the employer and the non-implementers are mostly extrinsically motivated – they only participate in professional development activities because it is a requirement of the employer. The results of the Kruskal-Wallis test show that the intrinsic implementers differ significantly from the non-implementers with respect to their motivation to develop professionally.

4.5.7. Subject matter. Finally, with respect to subject matter, no significant differences were found between the three groups. The Kruskal-Wallis test showed that $\chi^2(2) = .943$, $p = .624$. Intrinsic (mean rank = 31.44), extrinsic (mean rank = 30.29) and non-implementers (mean rank = 25.38) are similarly motivated to impart subject matter knowledge. The non-implementers constituted the group most strongly motivated by subject matter. The extrinsic implementers and the intrinsic implementers were less motivated by subject matter issues. However, as the Kruskal-Wallis test showed no differences between the groups, these differences are not significant.

4.5.8. Age. Finally, the issue of age was explored further. As previously mentioned, older trainers were more likely to implement than younger ones. A Kruskal-Wallis test was carried out for the three groups and the variable 'age'. The result showed that $\chi^2(2) = 7.540$; $p = .023$. The pairwise comparisons showed a significant difference between the extrinsic implementers (mean rank = 40.07) and the non-implementers (mean rank = 17.56). No significant differences between the intrinsic implementers (mean rank = 31.96) and either of the two other groups were found. Age is the only variable in which a difference between the extrinsic implementers and the non-implementers was found. Thus, the extrinsic implementers are significantly older than the non-implementers.

Therefore, it appears that rather than being motivated by learning facilitation per se (a segment of) the older trainers are more inclined to implement extrinsically, whereas younger trainers, if critical of the approach, do not implement it at all. Therefore, being older as a trainer does not necessarily mean being more in favour of the approach. The results suggest that older trainers are more prone to following the orders of the employer, even if they are not very convinced of the approach. To test this hypothesis, a correlation analysis was carried out between the factor 'attitude' as identified by PCA and the variable 'age'. The results showed that r(53) =.-. 091, p =

.509; no significant correlation was found between ‘age’ and ‘attitude’. The detailed calculations can be found in annex 9. This is in line with the hypothesis that older trainers implement learning facilitation out of a sense of duty rather than owing to positive attitude to the approach.

4.6. Attitude change over time

If attitude predicts the implementation of learning facilitation, a key question is how attitude towards learning facilitation is formed and how it changes over time. With respect to this study, it is interesting to know what attitude trainers had about learning facilitation initially and to see if the basic training influenced the trainers’ attitude. Finally, it is also worth exploring whether the attitude changed over time. In the questionnaire, four items were used to assess the attitude towards learning facilitation at four specific times:

Table 19. Attitude change over time

Before the basic training, my attitude towards learning facilitation was positive	t1
After the basic training, my attitude towards learning facilitation was positive	t2
After the first implementation (or two months after the training, if nothing was implemented), my attitude towards learning facilitation was positive	t3
Today, my attitude towards learning facilitation is positive	t4

The next section looks at the change of attitude over time for the three implementer groups. It is important to remember that the estimations of attitudes were all based on retrospective answers at the time of filling out the questionnaire. The measures are therefore not real measures in time but reported measures in time.

4.6.1. Change of attitude over time: intrinsic implementers. Considering the means of the aforementioned four items, it is clear that the intrinsic implementers began with a positive attitude towards learning facilitation (M = 1.79, SD =.89) that became more positive after the basic training (M = 1.44, SD = .67). It then became less positive after the first implementation (M = 1.48, SD = .59) and was most positive at the time of the questionnaire (M = 1.33, SD = .47). Due to the scaling of the questionnaire, 1 is the most positive and 4 the least positive value.

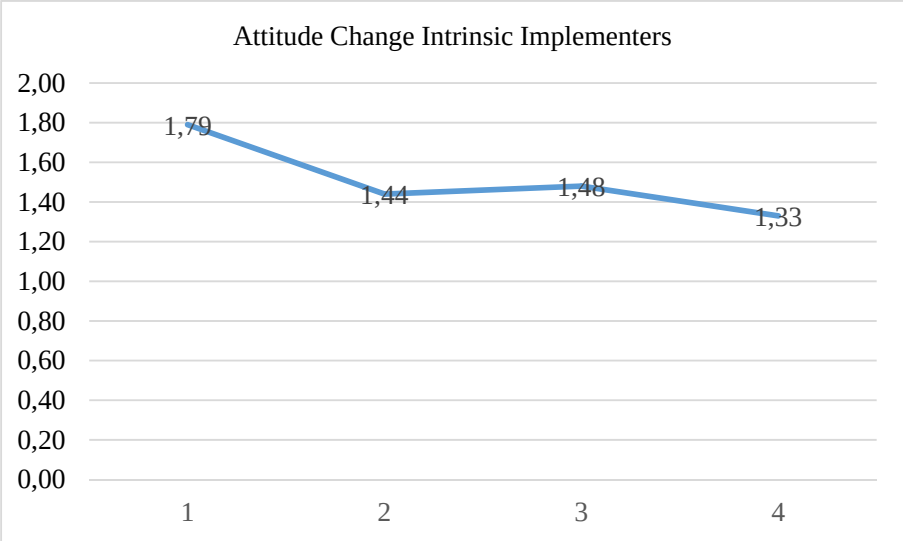

Figure 3. Attitude change over time: intrinsic implementers (n = 43)

A one-way repeated measures ANOVA was carried out. An a priori power analysis showed that the power of the test was 0.95 with an alpha error probability = 0.05, and that it was sensitive enough to detect medium effect sizes of f = 0.25. The assumption of normality was violated, but as the ANOVA is quite robust with respect to violations of normality, the decision to continue was made knowing that the data are not normally distributed. Sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(4) = .418$, $p = .000$. Therefore, a Greenhouse-Geisser correction was applied ($\varepsilon = 0.633$). It shows that the attitude towards learning facilitation changed significantly over time, $F(1.899, 79.769) = 5.078$, $p < .009$, partial $\eta^2 = 0.108$, with attitude becoming increasingly positive from before the first training (M = 1.79, SD = .89) to the time when the questionnaire was answered (M = 1.33, SD =.47).

Post hoc analysis with a Bonferroni correction revealed that the attitude of intrinsic implementers towards learning facilitation became significantly more positive from before the first training to the time when the questionnaire was answered (0.46(95% CI, .049 to 0.881), $p < .0005$). The partial effect size for the pairwise comparison between t1 and t4 were calculated with Cohen's d and yielded an effect size of 0.4, which is in between a small (0.2) and a medium (0.5) effect size. The other pairwise comparisons were not significant. All analyses can be found in annex 9.

4.6.2 Change of attitude over time: extrinsic implementers. When considering the means of the attitude towards learning facilitation over time, it can be seen that those who implemented learning facilitation out of an extrinsic motivation,

had a slightly less positive attitude towards learning facilitation before the basic training (M = 2.0, SD = 1.0) than the intrinsically motivated trainers. After the basic training, their attitude became more positive (M = 1.86, .38 SD). After implementation, their attitude dropped to the initial level (M = 2.0, SD = .57). At the time of filling out the questionnaire, it had dropped further (M = 2.14, SD = .90). The following figure shows the development of the attitude towards learning facilitation in the extrinsic implementers over time.

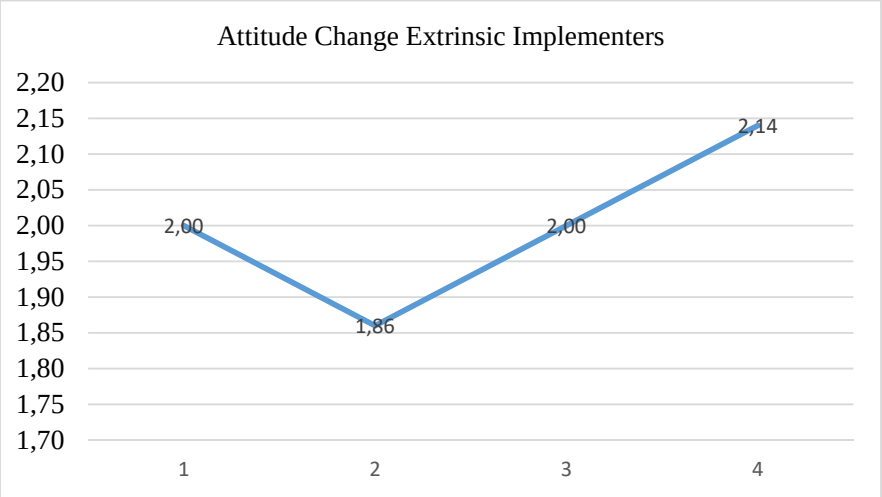

Figure 4. Attitude change over time: extrinsically motivated implementers (*n* = 7)

As the number of extrinsically motivated implementers was too small for statistical analyses, no further analyses were carried out.

4.6.3. Change of attitude over time: non-implementers. Those who had not implemented learning facilitation at the time of the questionnaire had the most negative attitude of the three groups, even before the start of the basic training (M = 2.8, SD = .84). While the other two groups had a positive or slightly positive attitude, the non-implementing group already had a rather negative attitude before the training. Further, unlike the other two groups, in which the basic training influenced the attitude positively but not significantly, in this group, the basic training had a negative effect on attitude (M = 3, SD = 1.0). Attitude fell back to its initial level (M = 2.8, SD = 1.30) two months after the basic training and remained there until the time of the questionnaire (M = 2.8, SD = 1.30). The following figure shows the development of attitude over time in the non-implementing group.

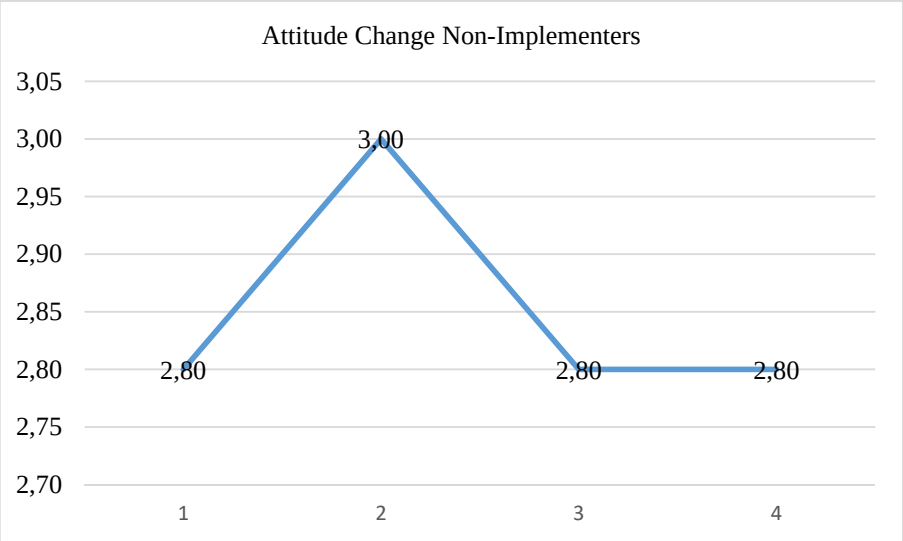

Figure 5. Attitude change over time: non-implementers (*n*=5)

As the group is also too small to carry out statistical tests, the graph is presented without further analysis.

4.6.4. Change of attitude over time: All groups.

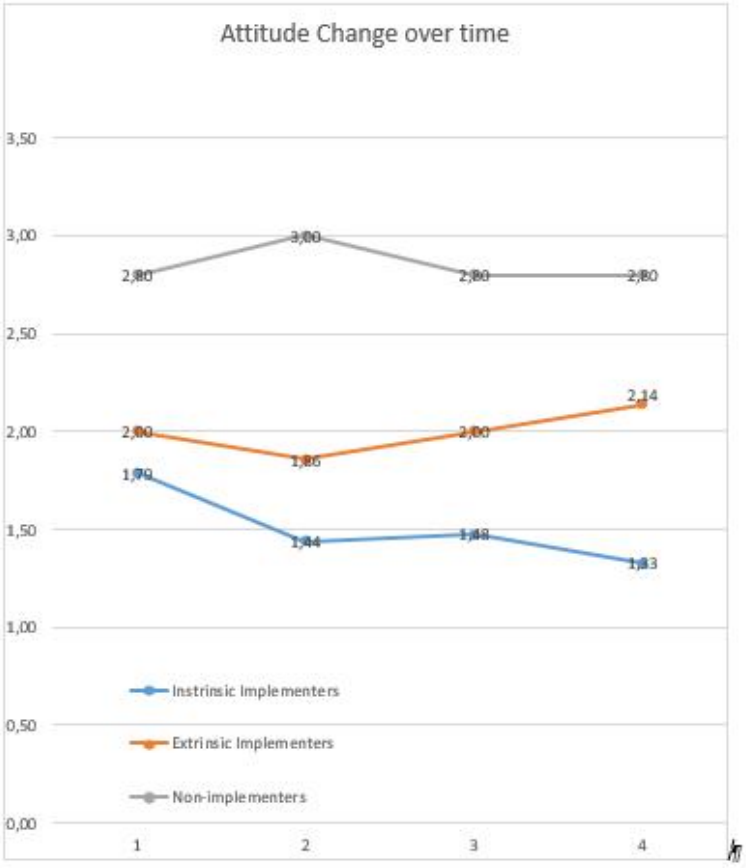

Figure 6. Attitude change over time: three groups

The results show that in the intrinsically motivated group, attitude changed significantly from before the basic training until the time when filling out the questionnaire. They began with a positive attitude that became significantly more positive over time. The attitude of the extrinsically motivated implementers and the non-implementers did not change significantly over time but stayed at the slightly positive (extrinsic implementers) or rather negative (non-implementers) level.

The basic training itself had no significant effect on attitude. However, it seems to have reinforced the respondents' existing attitude: The attitude of those who already had a positive attitude became slightly more positive after the training. The negative attitude that the non-implementers had before the initial training became more negative although not significantly so. It can be tentatively stated that the basic training stimulated a 'confirmation bias' (Wason, 1968). Those who were convinced of learning facilitation found a positive confirmation of their attitude whereas those who were already unconvinced of the approach had a negative confirmation.

However, the results have to be interpreted with caution as the number of cases in the groups of extrinsic implementers and non-implementers is small. For clarification, larger sample sizes are required, especially in the extrinsically motivated and the non-implementing group.

4.7. Summary of the questionnaire data analysis

The data analysis has identified three different implementer types; while one was motivated intrinsically and one was extrinsically motivated, one group did not implement learning facilitation at all. Intrinsic implementers have the most positive attitude towards learning facilitation while the extrinsic implementers have a rather positive attitude towards learning facilitation and the non-implementers have a negative attitude towards it. Intrinsic implementers differ significantly from non-implementers with respect to attitude, interest in new methods, the requirements of the employer and in terms of implementation. Attitude and age predict implementation. The more positive the attitude, the more likely it is that implementation will take place. The older the trainers are, the more likely it is that they will implement learning facilitation. However, older trainers implement learning facilitation out of a sense of duty rather than out of an internal conviction. Correlation analysis showed that attitude was neither negatively nor positively related to age. In the intrinsically motivated group, attitude became significantly more positive over time. The attitude of the extrinsically motivated and the non-implementers did not change significantly over time but remained stable at the initial level.

Chapter 5: Discussion of the questionnaire results

This chapter discusses the results of the data analysis of the questionnaire. The research questions that guided the research were:

- What motivates the uptake or non-uptake of learning facilitation?
- What makes trainers change their attitudes over time?
- What are the reasons for resistance?

As the questionnaire was answered predominantly by those in favour of the approach, the answers to research question one and two will be discussed in this section. The answer to research question three will be discussed using the analysis of the interview part of this study.

5.1. Uptake of learning facilitation

A major finding of the questionnaire part was that trainers' attitude towards learning facilitation strongly predicts its implementation. The more positive the attitude towards learning facilitation, the more likely it is that trainers will implement it. This result is in line with the literature on the adoption of educational innovations in other educational contexts. For instance, Ketelaar et al. (2012a, p. 334) found that teachers are most likely to take up an educational innovation if it is in line with their 'own frame of reference'. Orafi and Borg (2009) found that teachers are more likely to implement an educational innovation when it corresponds with their beliefs and attitudes about teaching and learning. Similar findings have been reported by Tondeur (2012), Smylie (1988) and Zhu et al. (2010). Therefore, the finding that the uptake of learning facilitation by trainers of occupational health and safety is predicted by their attitude towards it is congruent with the findings reported in the literature from the school context. In this respect, it appears that OSH trainers are similar to teachers investigated in the literature on educational change.

In addition, age predicted the uptake of learning facilitation. This effect was not clear from the literature. Whereas some studies report that older teachers are less prone to take up an educational innovation (Brody & Hadar, 2015), others report that there are no differences in uptake between younger and older teachers (Ketelaar et al., 2012b). In this study, older trainers implement to a higher extent than younger ones do. This appeared to be in line with teacher life cycle models, which state that older teachers are

open to the uptake of innovations, especially when they are at the stage of ‘enthusiasm and growth’ (Huberman, 1989). However, further analysis did not support this hypothesis, but showed that older trainers implemented more out of a sense of duty. Finally, gender did not predict the uptake of learning facilitation. This is in line with the literature, which has found no effect of gender on the uptake of educational innovations (de Vries, Jansen & van de Grift; 2013; Ketelaar et al., 2012b).

5.1.1. Different types of implementers. With respect to the uptake of learning facilitation, a second important result was that three different types of implementers were identified: intrinsic implementers, extrinsic implementers and non-implementers. The uptake of learning facilitation, therefore, is not uniform. While some trainers take up learning facilitation out of an intrinsic motivation and some because they are externally motivated, some do not take it up at all. Therefore, in the following section, each of the three implementer types will be examined in more detail.

***5.1.1.1. Intrinsic implementers*.** Intrinsic implementers are strongly convinced of learning facilitation and have a positive attitude towards it. They like the challenge of implementing it and are motivated by the desire for professional growth. In their professional development as trainers, they are particularly interested in learning about new training methods. With respect to their professional development activities, the requirements of their employer are not predominantly relevant, as they engage in them happily and voluntarily.

***5.1.1.2. Extrinsic implementers*.** Extrinsic implementers also implement learning facilitation. However, their main motivation to do so is to fulfil the requirements of their employer. They are less convinced of the approach. Their attitude towards learning facilitation is less positive than that of the intrinsic implementers but more positive than that of the non-implementers. Their reserved attitude towards learning facilitation seems to remain relatively stable over time.

5.1.1.3. Non-implementers. The non-implementers do not implement learning facilitation in their seminars. Their attitude towards learning facilitation is negative. As trainers, their sole motivation to engage in professional development is that it is a requirement of the employer, they are not interested in learning about new training methods. Their attitude towards learning facilitation, although not statistically significant, seems to remain stable at a low level over time.

The finding that there are three different kinds of adopters contrasts with views that conceptualise the uptake of educational innovations as an either/or phenomenon (see Abrami, Poulsen & Chambers, 2004). The results suggest that learning facilitation can be taken up in different forms. Uptake may be intrinsically motivated or be due to a more external motivation, such as the requirement of the employer.

The finding of three implementer types is supported by research on motivational profiles. Motivational profiles have been found in domains as diverse as physical exercise (Matsumoto & Takenaka, 2004; Ntoumanis, 2002), work motivation (Moran, Diefendorff, Kim & Liu, 2012) student learning (Vansteenkiste, Sierens, Soenens, Luyckx, & Lens; 2009) and teacher professional learning (den Brok, Hooijer, Martens, & Van den Beemt, 2014).

The studies mentioned above identified between three to five motivational patterns. All studies describe a highly intrinsically motivated profile, a moderately intrinsically motivated profile and a purely extrinsically motivated profile. The identification of additional motivational profiles, such as 'amotivation' (Matsumoto & Takenaka, 2004) or a differentiation between 'extremely autonomous' and 'highly autonomous' groups (den Brok et al., 2014), has led to the articulation of more than three profiles in some studies.

As motivation to take up physical exercise, for instance, Matsuko and Takenaka (2004) found four motivational profiles, which they termed 'self-determined motivation profile', 'moderate motivation profile', 'non-self-determined motivation profile' and 'amotivation profile'. Similarly, den Brock et al. (2014) in a study on teachers' motivation to engage in professional learning activities, found four different motivational groups: 'extremely autonomous teachers', 'highly autonomous teachers', 'moderately motivated teachers' and an 'external regulated profile'.

The aforementioned studies are all quantitative in nature. In a qualitative study, Ketelaar (2012b) investigated the willingness to take up a coaching role by teachers of vocational education in the Netherlands, an innovation whose orientation is quite similar to the uptake of learning facilitation investigated here. She found an 'engaged group' as well as a 'reserved group' that was 'more externally triggered' (p. 334). The engaged group showed more 'ownership' of the innovation and more active 'sense-making' of it. This means that teachers felt that taking on the coaching role made sense

within their educational contexts and that it was educationally sensible to adopt it. Teachers in the reserved group, on the contrary, showed less ownership and less sense-making. In addition, Ketelaar found that teachers in the reserved group also differed, which might imply that there may be subtypes of externally triggered teachers.

The three motivational profiles identified in this study correspond well with the findings of the studies quoted above. Here, three motivational profiles emerged, which can be broadly distinguished into a highly motivated, moderately motivated and an extrinsically motivated group. In line with Ketelaar's (2012b) results, the groups seem to differ with respect to their sense-making and ownership of the innovation – their attitude towards it and the degree to which they feel that the innovation is 'theirs'. However, the implementer groups have been found to differ not only with respect to attitude but also with respect to other factors. Examining these differences may shed light on factors that lie 'behind' the motivations to implement intrinsically, extrinsically or not at all.

5.1.2. Differences between the three motivational groups. The three motivational groups have been found to differ with respect to some of the factors identified by principal components' analysis. In this section, each of the factors will be discussed in turn. Significant differences were only found between the intrinsic implementers and the non-implementers. This is most likely due to the fact that the group of extrinsic implementers lies in between the other two groups and is not sufficiently different from the intrinsic implementers and not sufficiently different from the non-implementers to yield statistically significant differences. Consequently, only differences between the intrinsic implementers and the non-implementers are reported here.

5.1.2.1. Differences in attitude. Intrinsic implementers were found to differ from non-implementers in their attitude towards learning facilitation. This is not surprising as attitude has been found to be a strong predictor for implementation. One would, therefore, expect the intrinsic implementers to have a favourable attitude towards learning facilitation and the non-implementers to have a negative attitude towards it. The extrinsic implementers lie somewhere in the middle with respect to their attitude. In line with the aforementioned results, it should be expected that the different implementing groups differ with respect to their attitudes and the degree of being convinced of the approach.

5.1.2.2. Differences in extrinsic motivation as a motivating factor. The fact that intrinsically and extrinsically motivated trainers differ with respect to extrinsic motivation may sound like a tautology. However, the items used for the identification of the three implementing groups were different from those used to construct 'extrinsic motivation' as a factor. While the identification of the groups was done using items that examined the motivations to implement, motivations to carry on with the implementation and the general motivation to take up learning facilitation, the factor 'extrinsic motivation' is composed of items that are related to the motivation to develop professionally as a trainer. Thus, the first items look at motivation to implement, whereas the second items look at motivation to develop professionally as a trainer. This result actually shows that the non-implementers only take part in training related to professional development measures when it is explicitly required by the employer. So, the non-implementers' interest in participating in continuous professional development is low. The intrinsic implementers, on the contrary, take part in professional development activities because they are intrinsically motivated to do so and not because it is a requirement of the employer.

This analysis also shows the importance of the detection of implementer subgroups for this study. As shown earlier, the multiple regression analysis yielded 'attitude' as the sole predicting factor for implementation. 'Extrinsic motivation' as a factor failed to reach significance. Without the motivational subgroups, one might have erroneously concluded that the type of motivation does not have an influence on implementation when, in fact, it does.

5.1.2.3. Difference in interest in new methods as a motivating factor. Intrinsic implementers differ from non-implementers in their interest in learning about new teaching methods. The fact that the non-implementers only take part in professional training of trainers when it is required by the employer corresponds with their lack of interest in new teaching methods. If teaching methodology does not interest them, an external reason is needed for participation. In contrast, the intrinsic implementers are very interested in learning about new training methods and methodologies. This is consistent with a finding by de Vries et al. (2013) who found that teachers' preference for their own professional development activities reflect their teaching orientation. Stated differently, teachers who are student-oriented prefer activities in their professional development that are related to new methods, especially those that promote

more student participation. Subject matter oriented teachers, on the other hand, are more interested in subject matter trainings.

5.1.2.4. Differences in subject matter as a motivating factor. With respect to subject matter, however, no differences were found between the groups. On the basis of the aforementioned reflections, one would expect the non-implementers to be more subject oriented than the intrinsic implementers. The lack of differences may be explained by the fact that those who are interested in new methods may also like their subject matter. The finding that intrinsic implementers also show interest in subject matter can be explained by what Rjezak et al. (2014) call 'growth orientation'. While investigating teachers' motivation to participate in teacher professional learning, they found that wanting to grow as teachers could be related to wanting to learn about innovative training methods or the latest educational research. Therefore, both learning about new methods as well as learning about subject matter may be related to a growth orientation. Thus, the finding here is that the intrinsically motivated trainers like both: learning about new teaching methods as well as about their subject matter.

De Vries et al. (2013) found that the more student-oriented teachers were, the higher their participation in continuous professional development (CPD) activities. Interestingly, they also found that 'subject matter orientation revealed no notable relation to CPD' (p. 78). So, in fact, the more student-oriented teachers are, the more they participate in updating activities. However, interest in subject matter 'does not influence either positively or negatively teachers' participation in CPD' (de Vries et al., 2013, p. 224). This is most likely so because student- and teacher-centred teachers alike can show an interest in the subject matter they teach. In fact, when the data was checked in terms of subject matter values for the non-implementers, a mean value of 1.35 emerged (1 = totally agree, 4 = totally disagree). This supports the hypothesis that the non-implementers are highly subject-matter-oriented. There are no significant differences with respect to the intrinsic and extrinsic-implementers, as they are also interested in their subject matter and in subject-matter-related CPD.

To conclude, the finding that subject matter does not distinguish between the groups makes sense when conceptualizing the intrinsic implementers as being motivated didactically as well as by their subject matter, thereby showing a 'growth orientation' (Rjezak et al., 2014) as trainers. It also shows that all being student-centred as a trainer does not mean that one is not interested in one's subject matter.

5.1.2.5. Differences in having exchanges as a motivating factor.

For the factor ‘exchange’, no significant differences have been found between the groups. Exchange as a motivator for participation in CPD has been reported in the literature by Beck and Ullrich (1996) and by Gräsel, Prachmann, Puhl, Baer, Fey and Demuth (2004). This finding makes sense as having exchanges with seminar participants may be of interest for all implementer types as it is not specific with regard to the content of the exchange. Intrinsically motivated implementers may exchange views about new training methodologies or the subject matter they teach, whereas the extrinsic and the non-implementing group members may exchange views about more content-related issues. Künsting and Lipowsky (2011) found that social exchange as a motivation for participation in CPD may be either extrinsically or intrinsically inspired, depending on the degree to which it is congruent with the contents of the professional development measure. It appears, therefore, that exchange is something that inspires all three implementer groups.

This finding resonates with what Owen (2014) found in a study with experienced teachers: the more advanced people are in their professional career, the more they prefer learning by interchanging experiences with colleagues. Such an exchange can be fostered more successfully at conferences or through informal forms of collegial exchange than in the context of more structured courses and seminars. Exchange may be preferred because in individual discussions, topics are freely chosen and may be tailored to the individual’s professional interests. As the participants in this study were predominantly experienced trainers, one can speculate that they gain a lot from exchanging with colleagues and experienced seminar participants. With respect to recommendations for practice, one may infer that a form of professional development that is based on equality of status, such as an exchange among colleagues, may be more appropriate than a more hierarchically structured seminar, especially for more experienced educators (see Brody & Hadar, 2015; Piderit, 2000;).

5.1.2.6. Differences in knowledge. In terms of knowledge about learning facilitation, there were no significant differences between the groups. This, too, is an unexpected finding as one would expect that the intrinsically motivated implementers would know more about learning facilitation than the other two groups. As they are ‘fans’ they may be interested in knowing more about it. An explanation for this finding may be provided by the theory of confirmation bias (Nickerson, 1998), which holds that

those who are strongly convinced of an idea tend to ignore information that might lead to questioning of the idea (Lord, Ross & Lepper, 1979). Following this line of argumentation, it can be argued that the intrinsic implementers feel that they do not need to know much about constructivism as they assume that any further information would support their positive views in favour of this kind of learning and teaching anyway. Similarly, the non-implementers may think that they do not need to know more about learning facilitation as they 'know' that it does no work.

5.1.2.7. Differences in age. As stated above, age was found to predict implementation. The results showed significant age differences between the extrinsic implementers and the non-implementers. The correlation analysis showed that older trainers, who tended to implement more than the younger ones, did *not* have a more positive attitude towards learning facilitation. Therefore, age predicts implementation not because of a more positive attitude towards the reform or because of 'enthusiasm and growth' (Huberman, 1989) but rather because of a sense of duty of having to fulfil the requirements of the employer. It can be tentatively stated that while older trainers do implement learning facilitation out of a sense of duty, the younger ones feel less obliged to the employer and just do not implement it if they are not convinced.

5.1.3. Attitudes towards learning facilitation: change over time. The second research question asks whether the trainers' attitudes towards learning facilitation changed over time. In this part of the study, only a small amount of data has depicted some change in attitude. This will be complemented later on with the results of the interview analyses that also addressed this research question. The intrinsic implementers' attitude was positive and became significantly more positive from before the first training to the time of the filling out of the questionnaire. The extrinsic implementers' attitude remained stable at a middle level and the non-implementers' attitude remained stable at a more negative level. Thus, neither the non-implementers nor the extrinsic implementers changed their attitude over time.

That the intrinsic implementers' attitude became more positive over time may be due to the fact that they had their views and educational approach confirmed by the basic training. In combination with confirmation bias it could explain why the intrinsic implementers, viewed constructivism even more positively than before. Also, seeing that is it valued positively by their organisation may also influence the increase in their attitude towards positivity.

The fact that the attitudes of the extrinsic implementers and the non-implementers did not change over time is also congruent with the theory of confirmation bias. The basic training confirmed their negative views as they concentrated on aspects that confirmed their negative attitude rather than on those that 'challenge their assumptions' (Hämäläinen, Luoma, & Saarinen, 2013, p. 624).

The fact that attitudes haven't changed much on the basis of a single seminar is not surprising. In fact, for an attitude to change, a minimum amount of days (Postareff, Lindblom-Ylänne, & Nevgi, 2007), contact hours (Yoon, Duncan, Lee, Scarloss, & Shapley, 2007), and ideally a spaced out form of training is generally required (Kauffeld & Lehmann-Willenbrock, 2010). However, as many of the trainers have participated in additional measures on learning facilitation in other contexts, it can be expected that, taken together, these may have prompted an attitude change in some trainers.

However, two methodological issues have to be considered here: First, the sample sizes of the three groups are very unequal. So, it may be the case that no significant changes were detected over time in the two other groups because the sample sizes were quite small in comparison with the intrinsic implementers. As suggested before, a hypothesis is that the non-implementers' attitude would become more negative and the extrinsic-implementers' attitudes would become more individually varied: some would become more negative, some would become more positive and some would remain the same.

A limitation that applies to all three groups is that attitude change was measured retrospectively at the time of filling out the questionnaire. It may, therefore, have been influenced in part by measurement bias due to retrospective evaluation (Blome & Augustin, 2015). In future research, attitude change should be assessed at different points in time to get a clearer picture of how it actually changed.

5.1.4. Conclusion. The research questions that were addressed by the questionnaire as part of the study were what made trainers take up or not take up learning facilitation and what made them change their attitude over time. Apart from attitude and age, which were found to influence the uptake of the educational innovation, three motivational profiles were identified in the analysis. Further analysis showed that the intrinsic implementers were mostly student-oriented, that the non-implementers were teacher-oriented and that the extrinsic implementers were

somewhere in between. Therefore, it seems that what made the trainers take up or not take up learning facilitation and what influenced their motivational profiles were their underlying attitudes and teaching orientations.

With respect to the educational change process at stake, the trainers' attitudes and beliefs about learning and teaching are ultimately reflected in the motivational profiles (Borg, 2001; Borko & Putnam, 1996). Therefore, if one wants to modify trainers' motivation to take up learning facilitation, it is not just a matter of 'changing a motivational profile towards a more favourable one', as den Brok et al. (2014) suggested with respect to teachers' participation in professional learning. It requires altering the underlying 'frames of references' (Ketelaar, 2012a), beliefs (Borg, 2001), and teaching orientations which in turn influence the motivational profiles. Changing teaching-related beliefs and attitudes is a process that is known to take time (Murphy & Mason, 2006; Pajares, 1992).

With respect to the first research question, therefore, this study shows that the uptake of learning facilitation is influenced by the attitudes that are congruent with the educational approach of learning facilitation. If trainers' attitudes are not in line or contrary to constructivist ideas, the uptake will be more extrinsically motivated or will not happen. With respect to the change of attitudes over time, it appears that no real attitude change has taken place as an effect of the basic training but rather that trainers confirmed the attitude that they had before the initial training. Positive views became more positive whereas more indifferent and negative views remained stable over time.

Chapter 6: Results of the interview analysis

In the interview section of the study, motivations, experiences and reasons for resistance of those critical of learning facilitation were explored. The aim of the qualitative interviews was to dig deeper into the experiences and reasons for resistance of those critical of learning facilitation.

6.1. Levels of criticality

Being critical of learning facilitation may be understood differently by different people. In some questions, the interviewees were explicitly asked to rate their criticality on a scale. For example, one question asked: 'On a scale between 0 and 3, how would you rate your attitude towards learning facilitation, with 0 being very negative and 3 very positive'. These scaled questions can be considered as a self-assessment of the interviewees' degree of criticality. Taken together, they yield a first estimation of the degree of criticality and indicate the specific aspects of learning facilitation that the interviewees are critical of.

Table 20. Scaled questions of having a critical attitude towards learning facilitation

	Tom	**Lisa**	**Heinrich**	**Chris**	**Ben**	**Peter**
Attitude						
How would you describe your attitude towards learning facilitation? (0 – 3)	0	0	0	1	1	3
How would you rate your 'criticality' towards learning facilitation? (rated inversely, 0 – 3)	1	0	0	1	1.5	3
Attitude sum (minimum 0–maximum 6)	**1**	**0**	**0**	**2**	**2.5**	**6**

With respect to the interviewees' attitude, it can be seen that Tom, Lisa, Chris and Heinrich had a negative attitude toward learning facilitation with sum values ranging between zero and six (with zero being most negative and six the most positive). Ben had a slightly more positive attitude with a sum value of 2.5. Peter stands out with an attitude value of six; an extremely positive attitude towards learning facilitation. The same pattern with respect to attitude is reflected in the interviewees' answers to the question: 'How would you describe your being critical of learning facilitation?' The interviewees answers were as follows: 'critical' (Tom), 'I am against it' (Lisa), 'I don´t use it' (Heinrich), 'ambivalent' (Chris) and 'neutral' (Ben). Only Peter found enabling didactics 'super'. So four interviewees have a critical attitude towards the approach, Ben has a more neutral and Peter a very positive attitude. In accordance with the aim of

interviewing those who are critical of learning facilitation, Peter and Ben have to be looked at more closely in order to see to what extent if at all, they are critical of learning facilitation. The degree of implementation was also examined using various scaled questions. Again, the scale ranged from zero to three in the individual questions. Table 21 shows the degrees of implementation as reported by the interviewees.

Table 21. Degree of implementation

	Tom	**Lisa**	**Heinrich**	**Chris**	**Ben**	**Peter**
Implementation						
On a scale between 0 – 3, how strongly do you use LF in your seminars	1	0	0	1	1	0
How much, if at all, have your seminars changed? (0–3)	1	0	0	1	1	0
Some people say they hold seminars in the same way they did before. How much does that apply to you? (0–3, recoded)	0	0	0	0	3	0
Implementation (minimum 0–maximum 9)	**2**	**0**	**0**	**2**	**5**	**0**

Lisa, Heinrich and Peter had not implemented any element of learning facilitation in their seminars. They all had an implementation sum value of zero. Tom and Chris, both with implementation values of two, said they had integrated very few aspects of learning facilitation. They also said that their seminars had slightly changed. The results show that five out of the six interviewees either did not implement learning facilitation or implemented it to a very minimal extent. The analysis suggests that four interviewees (Tom, Chris, Lisa, and Heinrich) can be classified as critical: They have a negative attitude towards learning facilitation and hardly implement it in their seminars. Peter, who reports having a very positive attitude towards learning facilitation, does not, however, implement it in his seminars. Further analysis is needed to ascertain his degree of criticality. Ben has a neutral attitude towards learning facilitation and implemented elements of it. He appears to be the least critical of those interviewed. Peter, on the contrary, displays a huge discrepancy between his very positive attitude towards learning facilitation and zero implementation of it. This stands out as all the other interviewees show a clear correspondence between their attitude and the degree of implementation. Further analysis is required to show where, if at all, the criticality of Peter and Ben lies.

6.2. In-depth analysis of the interview data

The similarities as well as the differences between the interviews were analysed while constantly comparing and contrasting the emergent findings (Boeije, 2002; Glaser, 1965).In the analysis, three main overarching themes evolved: 1.) motivation, 2.) views on learning facilitation, and 3.) reasons for non-implementation/resistance. Section 3.3.8.1.3. in the methods chapter describes how the themes, subthemes and categories were developed An overview can be found in table 22.

Table 22. Themes, subthemes and categories

6.2.1. Motivation	Theme 1
Motivation to work as trainers	Subtheme 1
Fun	Category
Exchanging with participants/passing on experience	
Subject matter	
Positive Feedback	
Motivation to develop professionally as a trainer	Subtheme 2
No interest	
Improve subject matter knowledge	
Methodological training ok if it serves a concrete purpose	
Highly interested in methodological training	
Motivation to participate in the basic training	Subtheme 3
Requirement of the organization	
No participation	
Interest in the course	
6.2.2. Views on Learning Facilitation	Theme 2
Primacy of Methods	
Self-organized learning	
Seminar participants want input	
Pejorative language	
6.2.3. Reasons for non-implementation/resistance	Theme 3
External reasons for non-implementation and resistance	Subtheme 4
Nature of education	
Not suited for all participants	
Not DGUV´s mandate	
Not enough resources	
Personal reasons for non-implementation and resistance	Subtheme 5
Doing it already/Lack of appreciation	
Superiority of didactical approach not shown	
No practical need for implementation yet	
Exacerbating resistance	Subtheme 6
Obligation	
Failing in practice	
Reducing resistance	Subtheme 7
Appreciation of previous work	
Evidence for didactical supremacy	
More knowledge	
Community of convinced others	
Different terminology	
Nothing	

First, the motivation to work and develop as a trainer will be examined. Drawing on the constant comparison method, the analysis will start with the similarities among the trainers.

6.2.1. Motivations.

6.2.1.1. Motivations to work as trainers.

*6.2.1.1.1. Fun***.** With respect to the general motivation to work as trainers, a preliminary result was that the interviewees liked working as trainers and seemed to be highly intrinsically motivated to teach. When asked about why they engaged in teaching, all of them said that it was 'fun'. Tom, for instance, said 'I like giving seminars. One of my specialisations at university was adult education'. Similarly, Lisa said, 'It is fun, I like it. It is varied and interesting'. Ben states, 'Yes, I like it. Otherwise I would not do it. It is fun'. Only Heinrich is a bit less enthusiastic. He said, 'It does not have to do much which liking or not liking it. It is part of my work description'. Although for Heinrich giving seminars is not 'fun', it is clear that he considers training as an important task. Thus, the interviewees quite like giving seminars. When probed deeper about what it was that they liked about giving seminars, a shared answer among the 'younger' interviewees (i.e., Tom, Chris and Lisa) was that they liked the exchanges with participants.

*6.2.1.1.2. Exchanging with participants***.** Tom, for instance, said, 'Well, what I like is the contact with seminar participants and interchanging information about their work experiences'. Lisa said, 'I like to have exchanges with seminar participants'. For Chris, the exchange even extends to colleagues and other people: 'We have incredibly knowledgeable seminar participants. I like the contacts that I make, that go beyond the seminar, the colleagues and even friendships'. Here, it is clear that one of the motivations is to interact with the seminar participants, both within and beyond the seminar contexts. Motivation can be based on personal grounds or based on subject matter consideration. Thus, having exchanges with seminar participants seems to be a strong motivation for these three interviewees.

The 'older' interviewees, Heinrich, Peter and Ben, rather than having exchanges with seminar participants, are motivated by passing on their experiences. Ben, for instance, said,

> I have the impression that young colleagues can profit from my experience. I know how some things work. And I also get so much back from young colleagues in the training course. Also, I participated in redesigning the labour inspectors' course. So I want to see: how far does it fall on fertile ground and where do we have to readjust?

Ben is, therefore, motivated by the feeling that he can contribute to the training of the new generation of labour inspectors. Additionally, as he has been involved in restructuring the labour inspectors' course, he wants to see the extent to which it works. Similar to Ben, Peter is also motivated by passing on his experience to the next generation. When asked what motivates him to give seminars, he said, 'Passing on expert knowledge to the next generation'. However, rather than talking about experiences, like Ben, Peter concentrates more on passing on subject matter knowledge. Transmission of subject matter in seminars was, in fact, something that all of the interviewees considered important.

6.2.1.1.3 Subject matter. The importance attributed to the subject matter being taught was an important motivator for all the interviewees. Peter, for instance, makes reference to the social code, which is the basis for DGUV's training work and said 'Our mission is clear. It is in the social code, §23 SGB 7: We are to impart knowledge'. Thus, his emphasis on subject matter transmission originates from his own interests as well as from the legal foundations of DGUV.

Heinrich refers to the inherent peculiarities of his discipline in order to support his point that subject matter is important. He said, 'I give seminars because I want to teach subject matter to the participants. In my subject area, you have teach expert knowledge and facts. Without these, it does not work'.

Lisa also has a strong focus on subject-matter transmission. When asked about her approach to giving seminars, she said, 'Very subject-matter oriented and always with a strong reference to practice'. When asked what is important to her in her seminars, she said, 'That the participants perceive me as a competent teacher in class…a teacher who knows her subject matter well'. The selection of words is telling here; 'class' ('Unterricht') and 'teacher' ('Dozentin') which are borrowed from the school context and reflect a rather traditional view of learning and teaching. Further, Lisa seems to be interested in the impression she makes on the learners, i.e., being perceived

as a good ‘teacher’. Finally, Chris, when asked about his strengths when giving seminars, states, ‘Good instruction of complex relationships, complying with the seminar schedule and getting across the topics’. So he, too, shows a strong focus on contents and subject matter.

6.2.1.1.4. Positive Feedback. All interviewees are strongly motivated by the positive feedback they get from the seminar participants. When asked about what motivated her to give seminars, Lisa replied, ‘The happiness I feel when I get positive feedback’. Similarly, Peter commented, ‘Well, it flatters one’s personality when others listen and one receives appreciation’, whilst Chris said, ‘What I like? You get direct feedback from the participants, you receive appreciation.’

Therefore, rather than amotivated ‘laggards’, a term that Rogers (2010) created for those who lagged behind in adopting an innovation, the picture that emerges here is of very motivated trainers who like imparting courses, like interacting with seminar participants and strongly believe in the importance of subject matter transmission. The ‘intrinsic rewards’ (Oreg, 2012) associated with training are: interacting with seminar participants, teaching a subject matter that the interviewees consider important and receiving positive feedback for it. The fear of loss of intrinsic rewards is a factor that may lead to resistance in change processes as Oreg (2006) found out. He states, ‘employees’ sense of challenge, autonomy, and stimulation (i.e. intrinsic motivation), and their trust in management were the most meaningful antecedents of resistance to the change. Of the change outcomes considered, threats to intrinsic rewards aroused the most concerns’ (Oreg, 2006, p. 97).

All interviewees said that they liked giving subject matter trainings that were fun for them and provided them with appreciation and positive feedback. What is at risk therefore, with the proposed educational changes are these intrinsic rewards they receive when teaching.

***6.2.1.2 Motivation to develop professionally as a trainer*.** With respect to their motivation to develop professionally, it was found that the majority of trainers are not particularly interested in their own professional development. If they are, they prefer subject matter training over training in new training methodologies and approaches. However, subtle differences between the trainers exist.

6.2.1.2.1. No interest. Heinrich and Peter clearly stated that they were *not at all* interested in learning about new training methods. When asked, 'Are you interested in developing further as a trainer?' Heinrich answered, 'No. Look at me. That is something for the younger ones (laughs)'. He justifies his lack of interest in new training methodology with his advanced age. When probed further about the issues, he said: 'we know that from educational policy: Things get changed and then they are changed back. It is not in the nature of education that it has to be changed all the time'. Heinrich's lack of interest in new training methods is based on the idea that there are 'fashions' in education. What is considered important today may be considered outdated tomorrow. Heinrich does not believe that a change in methodology or methodological training might improve his seminars much and now does things in his own way.

6.2.1.2.2. Improve subject matter knowledge. Peter is also opposed to methodological training. With respect to professional development, his interest is in subject matter-related trainings. He said:

> Some interest, yes…but rather with respect to subject matter. Not so much with respect to methods. The topic of methods and didactics is completely overrated. Conversely, the subject matter context is completely underrated in our educational work at DGUV...We qualify our trainers methodologically and didactically, but nobody asks if they are fit in the subject matter content they teach.

Peter combines the discussion of the issue of his own professional development, with a discussion of his views about the relative importance given to subject matter versus methodological training in the organisation. According to him, there is generally too much emphasis on methods and too little emphasis on content knowledge.

6.2.1.2.3. Methodological training ok if it serves a concrete purpose. Whereas Heinrich and Peter are categorically not interested in methodological training, the positions of Tom, Lisa and Chris are more ambivalent. They are neither completely opposed to professional development in new training methods nor very enthusiastic about them. Tom would participate in a training activity if it promised a concrete benefit for his seminars: 'Well, training conferences, yes, I go there. But in general, I do not see the point. I once did a seminar on visualisation techniques. That I found useful. Something that can be directly applied.' In a similar vein, Lisa finds methodological

training interesting as long as it helps to better convey subject matter. She said, ‘I would like to learn how I can get contents across better to the target group.’

Chris, too, is predominantly interested in subject matter training when it comes to his professional development. He said, ‘With respect to content, I keep up to date continuously. Studying by myself, going to talks and conferences, exchanging with colleagues.’ With respect to training methodology and new methods, he appears pragmatic. He said that he is interested in learning about the new training methodology, especially about learning facilitation, as soon as he needs it for the restructured safety officer course. He said, ‘yes of course, when the new safety officer course will be launched – I´ll do it (the corresponding methodological course) in any case.’

6.2.1.2.4. Highly interested in methodological training. Finally, Ben said that he was very interested in methods-related professional development: ‘Of course I am interested. Lifelong learning. One wants to keep up to date, get to know new methods and try them out.’ He expresses strong interest in methodological training. This is in contrast with the motivational orientation of the other interviewees.

To summarise, Heinrich and Peter, are not at all interested in learning about new methods. While Heinrich is not interested owing to a general disbelief in the power of educational reforms as a whole, Peter is against it as he feels that there is an overemphasis within the organisation on methodological as opposed to subject matter training. Chris, Tom and Lisa are somewhat interested in methodological training as long as it serves in the transmission of knowledge and subject matter. The only trainer who appears genuinely interested in developing further methodologically is Ben.

6.2.1.3. Motivation to participate in the basic training. Except for Heinrich, all interviewees said that they had participated in the course on learning facilitation. The following categories emerged when analysing their motivations for participation: ‘requirement of the organisation’, ‘no participation’, and ‘interest in the course’.

6.2.1.3.1. Requirement of the organisation. Tom, Lisa, Chris and Peter said they had only participated because it had been required by the employer. Had it not been required, they would not have participated. Their motivation was therefore purely externally triggered. For instance, Lisa said*:*

> It was an order of the employer. I found the basic training very bad. But I did not say anything as it was an order from above. And, when they say: we have to

> implement it now - what´s the point in discussing it. You only get yourself in hot water.

When asked if she had participated voluntarily, she said, ‘No, I wouldn´t have participated voluntarily. (Half-laughingly): I dreaded it already before I went.’ Thus, Lisa began with a negative attitude which was not changed by the course. In addition, Lisa reports that she fears voicing her negative opinion openly as it goes against institutional policy.

Chris, who works as a freelance trainer for different statutory accident insurances, said, ‘It was an obligation by the organisation. It was clear: Those who don´t do it, don´t have to waltz in any more, they won´t get booked... I would not have gone if it had not been obligatory’. Interestingly, his evaluation of the course was not as negative as that of Lisa. When asked what he thought about the course, he said:

> It was kind of interesting – yes. The trainer got on my nerves…He seemed like on ecstasy. On the other side, it is also bold what he does in his trainings. You can do that with trainers, but with labour inspectors – I don´t know.

Thus, his evaluation of the basic training was mixed. He was impressed by some of the methods but stated that not all of the presented methods were apt for use with labour inspectors or other more conservative seminar participants.

Therefore, although all four trainers said that they had participated only because it was a requirement of the employer, they expressed different reactions to it. Lisa reported being fearful of offering criticism. Peter expressed anger at what he saw as the ignorance and arrogance of the trainers. Lastly, Chris was more pragmatic in his approach and more neutral with respect to the training and reported that he even came to like some aspects of it. Although the initial motivation to participate was similar for the four trainers (based on the requirements of the employer), their emotional reactions and final appreciation of it were different.

6.2.1.3.2. No participation. Heinrich had not participated in the basic training. The other trainers had at least taken the course, even if they did not want to. Therefore, Heinrich is different from the others in that his opposition to the educational innovation starts with not even participating in the course. When asked about his participation, he said: ‘No. Well, I would have had the opportunity to participate but - no.’

He reframes the requirement of the organisation as if it was an optional offer (‘opportunity’) that he declined. This is in stark contrast to Lisa, for instance, who said that she did not dare to speak against the basic training in spite of finding it bad or interviewees like Peter who said that he didn’t know if he would have participated voluntarily. Heinrich appears unconcerned about possible consequences and is more autonomous in his decision not to participate. He speaks openly about non-participation and appears less emotional with respect to learning facilitation. An explanation for this may be that since he did not engage with learning facilitation as a theory and does not know much about the approach (Bronkhorst et al., 2014), he feels less resistance to it. This seems supported by the fact that when asked about his attitude towards learning facilitation, he said, ‘I can’t give a clear estimation here as I don’t use it. It does not apply’. Similarly, when asked about what he most disliked about learning facilitation, he said, ‘Well, as I said, I don’t dislike anything about it as it does not concern me and my seminars’. It seems that in order to oppose something, one has to know at least a little bit about the issue that is being opposed – otherwise real opposition and engagement is difficult (Bronkhurst et al., 2014). Thus, in a way, Heinrich did not really engage in the educational reform. More than resisting learning facilitation, Heinrich seems to be ignoring it.

6.2.1.3.3. Interest in the course. In line with Ben’s interest in methodical training, he was the only one genuinely interested in the basic training. He said, ‘Yes, I wanted to participate. If you want to work in one of the modules there, you need it as a part of expanding your horizon’.

Ben sees the basic training as a necessary preparation for working as a learning facilitator in the new course for labour inspectors. When probed further about his attitude towards learning facilitation, which from the quote above does not seem to be as ‘critical’ as expected, Ben said:

> My attitude has changed over time. It is now more positive than at the beginning. I had many prejudices and no experience. I had an engineer-like way of doing things. … Now, I am very convinced that one remembers things better when one has actively worked on them. The participants retain more, they listen better, when their peers do it, than when a trainer does it.

When asked what made him change his attitude towards learning facilitation in more detail, he responded:

> Being part of the working group, in which people from different professions put in their ideas. When developing the new course for labour inspectors, engineering competencies were needed (...). In our group, we managed both: Content and new methodology. Without prioritizing one over the other.

Two factors seem to have been important in his attitude change: First, being part of an interdisciplinary working group in which engineers and educators both worked together. Second, the fact that because both competencies were needed, discussions were on an equal level. Ben's case is valuable for this study as it presents an example of how someone with a critical attitude towards learning facilitation became more positive over time. As the second research question addresses the question of trainers' attitude change over time, it is worth looking more closely at the factors that contributed to this change in Ben.

Ben was part of the working group composed of labour inspectors and pedagogical experts redesigning the course for labour inspectors. Being a labour inspector himself, he was one of the content experts in the group. As he had been explicitly invited to participate based on his qualifications as a labour inspector and subject matter trainer, he was able to maintain and even strengthen his professional identity in the group.

At the same time, working in this interdisciplinary team allowed him to constantly participate in discussions about OSH content as well as about constructivist methodology. In this small working group, issues in terms of primacy of subject matter as compared to methodology were discussed on an equal footing between the educationalists and the engineers. As he emphasised in his interview, there was team spirit and equality among both professional groups. Interdisciplinary teams can promote attitude change as findings by McCallin (2001) and Wilmot (1995) suggest. They found that working in interdisciplinary teams promotes perspective taking, understanding and the development of a more positive stance towards those of a different profession. The co-construction of the new training course for labour inspectors, in which each group could maintain its professional self-esteem and was valued for its contribution, can be

considered, in a way, as a prolonged professional development measure in learning facilitation.

Participation in this working group fulfils many of the aspects that research on successful professional development measures has identified as effective: It was spaced out over time with various contact meetings – instead of a one-shot measure (Desimone, 2009, 2011; Kauffeld & Lehmann-Willenbrock, 2010). In addition, it involved collective collaboration as several people worked together in the group and reflected on the results. Brody and Hadar (2011) found that *repeated discussions* in a (learning) group helped those who were in a state of scepticism or resistance to move towards a position of acceptance. It can be speculated that a similar effect was at work in this group. Furthermore, Ben's participation was voluntary (Kennedy, 2016). It also helped that informal and bidirectional contact was possible during the group meetings - allowing the clarification of questions at an informal level. Piderit (2000) explicitly recommends such small-group, bidirectional conversations as successful change management measures, especially for those more reluctant to take on the change.

What finally drew Ben to a more positive attitude was being able to see how it worked in practice, that is, the effect it had on learners. This is in line with the literature that reports that seeing the benefit of a change is what most convinces people (Oreg, 2006; Rogers, 2010). To conclude, in contrast to normal OSH trainers, who only participated in training seminars on learning facilitation, Ben was somewhat privileged in that he had a forum of interactive discussions on learning facilitation over time.

***6.2.1.4. Synopsis: Motivation to work as trainers*.** When considering the interviewees' motivation to work as trainers, their motivation to develop professionally and to take part in the basic training, it becomes clear that in their teaching orientation and motivation, they are very similar: They are highly motivated trainers with a strong subject matter orientation. The motivation to develop professionally, if present at all, is oriented towards learning more about their subject matter. Participation in the basic training mainly took place because it was required by the employer. While similar in general orientation, distinct differences exist among the trainers: Heinrich did not participate in the basic training and did not implement anything. Ben, Chris, Tom and Peter only took the course because it was required. With respect to the course itself, Peter and Lisa remained very critical, whereas Chris sees it less negatively. Ben

changed his attitude toward learning facilitation from somewhat negative to quite positive.

6.2.2. Views on learning facilitation. From the analysis of the data, a second theme 'views on learning facilitation' emerged. This theme had the following four categories: 'Primacy of methods', 'self-organised learning', 'seminar participants want input' and 'pejorative language'.

6.2.2.1. Primacy of methods. Primacy of methods refers to the view that learning facilitation consists primarily of applying a set of training methods in a seminar and that these methods are prioritised over the subject matter. For instance, Chris states, 'as a method, learning facilitation is ok. The problem is the method is put above the content. Yet, in our settings, the content is most important'. Similarly, Tom said, 'It is only about methods. The aim of the method, to transmit content, is lost or is not mentioned'. According to Chris and Tom, learning facilitation consists of using certain methods without considering the content. Ben takes this interpretation a step further to the area of curriculum development, where he observed similar tendencies. He said, 'When at the start of a developmental process, methods are already set, and then the content is sought for, then something is wrong'.

In addition to the primacy of methods, the methods, themselves, are perceived by some as not being appropriate to the context of adult education:

> Methods from family systems were presented there. I find that very dangerous. That seminar participants had to talk about their emotions. Many don't know how to do that. If we ask a safety officer to talk about his emotions – he thinks we are crazy...

Thus, some of the presented methods were felt to be unsuitable for the participants of the seminars. For these interviewees, therefore, learning facilitation is not perceived as a constructivist theory about how learning works but purely as the application of a set of new training methods with little relation to the subject matter. This resonates with the general criticism alluded to by Peter who criticised the training department of the DGUV for prioritising methods and training competencies over subject matter qualifications.

6.2.2.2. Self-organised learning. Some of the interviewees referred to of self-organised learning as an aspect of learning facilitation. When asked about his

conception of learning facilitation, Chris said, 'Well, it is a method, with which participants can learn to learn things for themselves…in a self-organised way…what was that… You cannot teach, you can only…well, what I know'. Similarly, Lisa states:

> Enabling didactics is a declaration of incompetence of Germany's educational system. As if our educational system wasn't capable of teaching learners how to learn by themselves. You already learn that at school, university, to self-organise your learning…Enabling didactics, I understand as follows: You have a problem and you have to solve it on your own. The learning facilitator accompanies you and helps you if you don't know how to go on.

It appears that in addition to learning facilitation being perceived as putting methods over content, a second conception of it is that learners have to self-organise their learning. Why self-organised learning is supposed to be important was not referred to. Therefore, in addition to the primacy of methods, which was a conception of learning facilitation that all but one (Peter) of the interviewees shared, some mentioned self-organised learning. Yet, this was mentioned to a far lesser degree. It appears that in spite of having taken part in trainings on learning facilitation, the image that prevails of learning facilitation is predominantly as applying a set of methods.

6.2.2.3. Seminar participants want input. Perception of learning facilitation as a set of methods led to the emergence of a category in which the participants' wish for input was stressed and the category 'seminar participants want input' emerged. Interviewees feel that participants' interest lies in receiving subject matter input and that participants, like themselves, are critical of learning facilitation:

> 'I have heard critical voices from seminar participants: "That was not so wishy-washy. Thank God, you did not do enabling didactics." Participants like numbers and facts.' (Chris)

> 'The participants have a huge appetite for expert knowledge. Sometimes I think: Oh, the lawyers have done a whole week of pure presentations. However, participants like it.' (Peter)

Thus, according to the interviewees, participants want technical topics as well as facts and figures the most. They do not mind a whole week of teacher-centred input based trainings. This is contrasted with learning facilitation as being 'wishy-washy'. So, the focus on subject matter, voiced by most of the critical interviewees, is also perceived

to be a priority of the seminar participants. Like themselves, they feel that the seminar participants dislike learning facilitation.

6.2.2.4. Pejorative language. The interviewees express their disdain for the approach using pejorative language. Some examples are given in the following quotes:

> ‘We don’t have space here for funny games.’ (Heinrich)
>
> ‘Too many didactical games.’ (Tom)
>
> ‘The participants do not need a circle of chairs or multi-coloured balls to understand how to calculate insurance contributions.’ (Peter)
>
> ‘It is all about methods and not about content. They are building a never-never land (Wolkenkuckucksheim).’ (Chris)

The interviewees use phrases such as ‘funny games’, ‘didactical games’, ‘multi-coloured balls’ or ‘never-never land’ to refer to the approach. These words evoke associations of approaches suitable for kindergarten or primary school but not for experienced OSH professionals. The insinuation here is that these methods do not help to get the content across but rather obstruct the learning process by not being adequate either for the target group or for conveying the training content. Using negative metaphors and devaluing language to refer to an orientation that is different from one’s own is a typical means of ‘disqualifying’ the opposing position and promoting negative attitudes towards it (Copur, 2016). Devaluing an opposing opinion by using ridiculing language and pejorative terms is also a way to evade a rational and objective discussion and is sometimes used to reaffirm one’s own position in conditions of uncertainty or threat (Blake & Mouton, 1961). Even Ben, although in favour of the approach now, seems aware of the use of pejorative words and pleads for a change of terminology. He said: ‘I don’t like the word. In my experience as a trainer in the new course for labour inspectors, it has a negative connotation. It is equated with “little games in the training and cotton balls.” I never liked the word.’

To summarise, the interviewees conceptualise learning facilitation primarily as a set of new methods, which they refer to in pejorative terms. They feel that prioritising methods over subject matter is irresponsible with regard to the seminar participants. Learning facilitation is positioned in opposition to subject matter transmission and a dichotomy between ‘subject matter’ and ‘enabling didactics’ is constructed. As they

consider the transmission of subject knowledge crucial to successful training and education, learning facilitation is out of kilter with their training priorities and their motivations as trainers.

Learning facilitation is constructed by the interviewees as diametrically opposed to their subject matter orientation. The category ‘participants want input’ can be interpreted as reaffirming the interviewees’ subject matter orientation: Subject matter is important to them as trainers since participants want it and it is the responsibility of the organisation to provide it. This is a strong reaffirmation of the importance of their own training orientation. Research has shown that in the light of impending change and threat to one’s own identity, there is a tendency to become more ‘radical’ in one’s own position (Baumeister, King & Taylor, 2011; Myers, 1975; Smart, & Boden, 1996) thereby defending it against an externally perceived threat such as the loss of intrinsic rewards provided by their way of doing trainings. In the case of the interviewees, it may be hypothesised that there is also a tendency to over-emphasise their own position - subject matter orientation - as a way to protect their own position.

All interviewees juxtaposed learning facilitation with subject matter orientation. As a consequence, there appears to be a dichotomy between subject matter orientation and the educational innovation suggested. The two orientations are incompatible when perceived in this way. This dichotomised view of learning facilitation does not leave space for exploring points of overlap or convergence. Using pejorative language to refer to learning facilitation, viewing it as promoting ‘little games’ and ‘multi-coloured balls’ can be interpreted as a direct consequence of the opposition of their teaching orientations. In the literature, the use of pejorative language has been found to be a sign of resistance. Bronkhorst et al. (2014), for instance, report the use of provocative language such as mockery and sarcasm in a study of two teacher training students who perceived a strong mismatch between their learning preferences and those of the program they attended. Similarly, Middleton, Abrams and Seaman (2011) claim that negative or pejorative language within change processes can be conceptualised as ‘active resistance’. The critical trainers, therefore, seem to strengthen their own position by expressing it more radically than usual while, at the same time, ridiculing the educational innovation by referring to it in deprecating terms. In the literature, this mechanism is known as ‘othering’ (Johnson et al., 2009), which refers to making others appear more different from oneself than they actually are.

6.2.3. Reasons for non-implementation/resistance. Considering the implementation of learning facilitation by the critical trainers, the initial analysis presented at the beginning of this chapter showed that, apart from Ben, the trainers interviewed here did not implement learning facilitation in their seminars or did so to a very minimal extent. When investigating the reasons for their non-implementation, two kinds of reasons emerged: external reasons and internal or personal reasons. External reasons may be societal, legal or organisational hindrances to implementation that are mostly outside the sphere of influence of the individual. In this analysis, 'nature of education', 'not suited for all participants', 'not DGUV's mandate' and 'not enough resources' emerged as categories of external reasons. External reasons for non-implementation, which were mentioned by Peter, Heinrich and Tom, seem more detached from the person stating them.

In contrast, internal reasons, whose origins lie within the person, reflect more personal reasons for non-implementation. Internal reasons for non-implementation, therefore, always make a direct reference to the views or emotions of the persons stating them. This might include being dissatisfied with implementation procedures or a personal disbelief in the approach. When specified, these reasons are normally stated in the first person singular. The categories that emerged with respect to the personal reasons for non-implementation were 'lack of appreciation of previous work', 'superiority of didactical approach not proven' and 'no practical need for implementation'. The next section looks at the external reasons for non-implementation first.

6.2.3.1. External reasons for non-implementation and resistance.

6.2.3.1.1. Nature of education. Heinrich mentioned the 'nature of education' as a reason for why any sort of educational reform may be unnecessary. He identified two educational changes, in which reforms did not have any favourable results. Referring to a change in Germany's school system, in which getting to the German Abitur was shortened from 13 to 12 years; he said, 'This is a good example, everything is turning back again. This shortening of the years of education. We could have all done without it. Education is not so that you have to change it all the time.'

Here, Heinrich refers to a history of what he believes to be superfluous reforms; his opposition is not towards learning facilitation per se but towards educational reforms

in general. ‘Nature of education’ is therefore used as a general argument against the implementation of any type of educational innovation. It is not directed against the specific reform of learning facilitation nor the specific context of DGUV.

6.2.3.1.2. Not suited to all participants. A second reason given for not implementing learning facilitation was that the approach might not be appropriate for all types of seminar participants: Tom, for instance, said, ‘To use enabling didactics for all - I think that’s nonsense. Using it on crane operators and forklift truck drivers does not make sense’. In a similar vein, Heinrich contends, ‘Perhaps, it works with some professional groups. But a lawn-mover for all - that is not constructive’. Finally, Peter said, ‘sometimes I wonder if enabling didactics is the right form for everybody. If someone went to a technical university -where everything is very structured - these people are not so fit in self-organised learning’.

The aforementioned interviewees’ intuitive statements are in line with some of the criticisms of constructivism in the literature (Wheelahan, 2009; Van Bommel, 2012) which suggest that learning facilitation may be best suited to those who already know how to self-organise their learning. For learners who come from backgrounds that did not give them the chance to acquire such competencies, more structured approaches may be more helpful (Sweller, 1988).

*6.2.3.1.3. Not DGUV’s mandate***.** A third external reason against the implementation of learning facilitation is mentioned by Peter: ‘The task of DGUV is not to be avant-garde in educational methods. We should stick to the traditional and not start doing experiments.’ He also said, ‘It does not say in the social code VII that we shall develop the seminar didactics further. We are to research accidents at work and occupational diseases’.

Thus, for Peter, launching a new educational approach is not part of the organisation’s mandate, and this is a strong reason not to implement learning facilitation. One could extend the argument further and infer that implementing educational innovations is against the legal mandate of DGUV and may obstruct the principal task of imparting knowledge related to accident prevention. So, if dealing with innovative educational approaches is neither foreseen nor tolerated in DGUV’s mandate, implementation is not dependent on whether or not some people like the approach or prefer it to others – it is just not what is required by law of the organisation.

6.2.3.1.4. Not enough resources. Peter goes on to state that even if DGUV wanted to implement learning facilitation, despite it not being covered by its mandate, implementation would be impossible as there are not enough people available that could act as learning facilitators. In Peter's view, learning facilitation is conceived of as an approach that only works with small groups, in which learning facilitators monitor the individual learning progress of each of their students. He said, 'The role of learning facilitation is non-realizable in our context. Here, we have permanently 200 to 300 people in the course for labour inspectors. Who shall be their learning facilitator? We don't have so much staff.' Thus, even if the organisation wanted to follow the approach, there would not be enough staff to provide learning facilitators for all learners.

To summarise, the external reasons for non-implementation comprise the categories: 'nature of education', 'not suited for all participants', 'not DGUVs mandate' and 'not enough resources'. Peter, who has the most positive attitude towards learning facilitation but did not implement it was the one who identified most of the external reasons for non-implementation. In fact, the two reasons 'not DGUVs mandate' and 'not enough resources' were only mentioned by him. In this part of the analysis, therefore, the reason for the discrepancy between his positive attitude and non-implementation becomes clear: If he does not see learning facilitation as DGUV's mandate and feels that there is a lack of resources to implement it properly and conceives of it as not suited for DGUV's seminar participants, non-implementation is a logical consequence of his reasoning. Learning facilitation, according to him, may make sense in other contexts that have a different mandates, different students and different resources.

6.2.3.2. Personal reasons for non-implementation and resistance. While the previous section looked at the external reasons for non-implementation, this section explores the internal or personal reasons for resistance. In the analysis, the categories 'lack of appreciation of previous work', 'superiority of didactical approach not proven' and 'no practical need for implementation' emerged.

6.2.3.2.1. Doing it already/Lack of appreciation of previous work. Different from the motivations to give trainings, which were relatively similar for all the interviewees, the personal reasons for non-implementation are quite specific to individual trainers. The lack of appreciation of previous work, for instance, was a reason that was only mentioned by Tom. It refers to the emotional consequences of the fact that

years of valuable educational work seem to have gone unnoticed. According to him, his seminars and the educational work at the DGUV had been methodologically varied before the educational reform already. He said, 'It seems as if we have been doing bad seminars for 20 years. Which is not true. We do not have to change or reorganise our seminars.'

Here, it appears as if Tom feels that his 'honour' as a professional trainer has been injured. He refers to the launch itself as 'hype' which consisted of a lot of 'hot air'. He said:

> It appears that we have to change from zero to 100. As if we had only done teacher-centred seminars all these years. There is no breach between before and after. Before, I have done a lot in that direction. Only, it wasn´t called enabling didactics at the time.

The portraying of learning facilitation as *the* approach that finally has an educational effect on participants creates resistance in him. What Tom describes here can be interpreted as a threat to his professional self-esteem and identity. It is often countered, by identifying current practice as already being in line with the suggested reform.

Gregoire (2003) describes how a discrepancy between the orientation of a proposed educational innovation and teachers' own teaching orientation can be perceived as a threat to the educators' professional identities (Ketelaar et al., 2012b; Rogers, 2003; Van Veen & Sleegers, 2005). In the data reported here, this threat was expressed by the 'lack of feeling valued' and the 'hype during implementation' expressed by Tom who said that it appeared that nothing of what had been done before had been worthwhile. This poses a strong threat to his professional identity and self-esteem. Implicit in the devaluation of twenty years of training is the lack of value for the trainer who imparted it. If one's self-esteem is threatened, a common mechanism is to try to quickly re-establish a sense of self-worth. This mechanism is often called defensive mechanisms (Bovey & Hedey, 2001; Lazarus, 1966) or protective mechanisms (Brody & Hadar, 2011).

In a voluntary educational change project with experienced teacher educators, Brody and Hadar (2011) identified several protective mechanisms serving to reaffirm educators' sense of self. The authors found that although initially enthusiastic about the

innovation, when the teacher educators found themselves confronted with ideas that challenged their previously held beliefs, they all showed permanent or transient signs of ‘resistance’, which Brody and Hadar (2011) call ‘withdrawal’:

> Once the participants began to learn about new theories and methods, excitement shifted to scepticism accompanied by self-appraisal about their current practice. In withdrawal, teachers were no longer open to new ideas, constructed protective mechanisms. (p. 1231)

As protective mechanisms, the authors identified ‘confirmation of professional competence’ (‘I know that already’), ‘identification of each new pedagogy with previously used methods’, ‘relabelling current practice’, ‘evidence for current expertise’ and ‘discovering roadblocks to implementation’ (p. 1231). In this phase, they found that the discourse of the educators centres around the self, on personal achievement and on individual and private reasons for not adopting the change.

This is similar to the results found her. An identification of the new approach with previously used methods was found in the category ‘Doing it already’, in which current practice was described as already including many elements of learning facilitation. In addition, the other ‘roadblocks to implementation’ or ‘external reasons for resistance’ put forward by the interviewees - i.e. that learning facilitation is not suitable for participants, that there aren’t enough resources to implement it and that it is not DGUV’s task to innovate educationally - are similar to those identified by Brody and Hadar (2011). If there are innovations that cannot or should not be implemented due to external reasons or if one already implements much of what is suggested, no real change is needed. Thus, identifying roadblocks to implementation can be an effective way of paying lip service to an innovation without having to change oneself.

However, care has to be taken when interpreting these findings in this way. As there were no observational aspects to the study, it is not known whether the interviewees who say that they already used elements of learning facilitation before its launch (‘doing it already’) had actually not really done so. It may very well be true that the trainers had used elements of what is now called learning facilitation in their seminars already.

6.2.3.2.2. Superiority of didactical approach not proven. While Tom seems to feel hurt that the work he has done for over 20 years is not appreciated, Lisa's principal criticism is more intellectually based. She states that what most annoys her was the fact that the didactical superiority of the approach had not been convincingly explained to her. She said, 'during the basic training, I always asked: for which contents are these methods suited? And the trainers could not give me any answers. They papered over the cracks by gabbing and gabbing – but they did not answer my question'.

A similar frustration occurred not only with respect to fitting methods to contents but also with respect to the didactical approach as a whole. When asked how motivated she was after the basic training to implement learning facilitation, Lisa said:

> Not at all. Because it had not convinced me. They (the trainers) should have given a concrete example: What results does traditional didactics bring about and what does enabling didactics bring about? They should have shown me: what is better now with enabling didactics. Or why participants learn more, more rapidly or better. And this proof was not shown.

Lisa was theoretically interested in the approach - wanting to know why and how learning facilitation was superior to previously held conceptions about teaching. According to her, no evidence was produced that explained satisfactorily why she should adopt the new approach.

In the case of Lisa, therefore, the reason for resistance was not having been convinced of the 'didactical superiority', that is, what makes learning facilitation qualitatively better than the previous approaches. What is missing is a 'reason to believe' in the new approach. Adoption of innovation is fostered if people see the benefit of the approach for themselves and for the organisation (Oreg, 2012; Rogers, 1963). From the point of view of the organisation, Lisa's case can be described as a missed opportunity. When asked about her main learnings from the basic training, Lisa said, 'The main learning? That I think that it is not at all reasonable to implement enabling didactics as it does not represent any improvement on the previous didactic orientation. Quite the contrary.'

Thus, the lack of evidence of the superiority of the approach, which wasn´t provided when requested, led to non-adoption of and resistance towards learning facilitation in a trainer who was interested in learning about it.

6.2.3.2.3. No practical need for implementation yet. Finally, a last reason for non-implementation was more pragmatic. Chris states that he did not have the practical need to implement it as yet, as the new constructivist version of the course for safety officers, in which he works as a trainer, has not yet been launched. He said:

> I haven't dealt with learning facilitation much since the basic training. They said that the new training course for safety officers would be launched in 2014, then they said it would start in 2016. And we still don't have it. Therefore, I haven't put much energy in it. But in general, I am not generally against learning facilitation.

In fact, what he does not like is not the didactical orientation but the organisational insecurities related to it: When will it finally start? How will it be implemented? How much more time and energy does he have to invest in being trained himself? He said:

> Mr. (name), he presented the new training course for safety officers recently. But how it is done in detail - that is not said. What I don't like? Not the role as learning facilitator but this vagueness - nothing is clear. In addition, what I don't like is the extra effort: What do I have to invest in time and in terms of training?

Here is an example of reasons for non-implementation that are related to organisational and practical issues rather than to strong internal objections towards the approach. Chris is willing to implement learning facilitation as soon as the new learning facilitator course is launched. What he opposes is the insecurity related to the technicalities around the implementation process.

Tom, Lisa and Chris all expressed their objection to learning facilitation openly. Expressing open criticism is sometimes referred to as the first step in entering into a dialogue with the suggested innovation, albeit in a negative way. Kindred (1999), for example, describes this process by saying that 'resistance, despite its negative style of expression, is a purposive entry into a dialogic and potentially exploratory process' (Kindred, 1999, p. 218). In a similar vein, Sannino (2010) states that 'resistance can be an early sign of exerting agency of the learning process, which, in turn, can be seen as necessary for continuous professional development' (p. 74). By voicing their criticism of learning facilitation openly, the interviewees are therefore actively engaging with the reform, if only by relating to what is being resisted (Bronkhorst et al., 2013).

Three interviewees mentioned personal reasons for resistance that were specific to each interviewee. Whereas there was a huge overlap in what motivated them as trainers, there is hardly any overlap between the personal objections voiced. While Tom, for example, asks, ‘How is learning facilitation different from what I am doing’, Lisa asks: ‘Why is it superior’? Neither has, in their opinion, got a satisfactory answer from the organisation. Chris’s reasons for non-implementation can be described as being more pragmatic and his resistance as less pronounced. As the constructivist version of the training course, in which he teaches, has not been launched, he hasn’t had the opportunity to implement it yet.

6.2.3.3. Exacerbating resistance. While examining what could make the attitude of the interviewees more negative, ‘obligation’ and ‘failing in practice’ emerged as key categories.

6.2.3.3.1. Obligation. One way of increasing resistance that was identified by all interviewees, except for Chris, was making learning facilitation obligatory within the organisation. Tom, for instance, said, ‘How could it get worse? If DGUV made the methods obligatory’. Along the same lines, Heinrich said, ‘If it was obligatory for all seminars. Then I would take my things and go’.

Pressure and obligation, which are sometimes advocated as measures to implement organisational change processes, would only serve to make the interviewees’ attitude more negative. This is in line with a finding by Zhao and Cziko (2011), who found that if teachers are pressured to adopt an educational innovation, resistance increased. In this study as well, nearly all interviewees said that making learning facilitation obligatory would increase their resistance to it. Therefore, forcing trainers to implement is not a sensible organisational measure to increase implementation.

6.2.3.3.2. Failing in practice. On a more pragmatic note, Chris states that he would see learning facilitation more negatively if it failed in practice, that is, if it did not work in his seminars. He said, ‘If it showed to be non-applicable in practice. Like, it is only a theory that one cannot apply’. As the only freelance trainer, Chris is concerned about the applicability of the approach. Obligation may be less of a concern to him because, as a freelance trainer, he has probably more options to opt out of the process, if he wishes to, than an employed trainer who is bound to the organization has.

6.2.3.4. Reducing resistance. With respect to measures to improve their attitude, the interviewees referred to those aspects that they had mentioned as producing their negative attitudes in the first place. Consequently, they said that if these aspects changed, their attitude would become more positive. As the reasons for resistance were quite individual, what emerged for reducing resistance was also quite individual. It is worth noting that only those trainers who had stated personal reasons to resistance and Ben, the trainer who had change his attitude, suggested ways by which their attitude could improve.

6.2.3.4.1. Appreciation of previous work. Tom states that changing how the institution communicated about learning facilitation may reduce his resistance: 'If, in the institutional communication, the term "enabling didactics" was more grounded, more down to earth. Less hype. More earthed, that is the right word.' More adequate communication for him also includes the recognition that learning facilitation is not as different from the way training has been done until now in the organisation and that many things have been done well in the past as well.

6.2.3.4.2. Evidence of didactical supremacy. Similarly, Lisa said she would develop a more positive attitude if the didactical advantages of learning facilitation were explained to her: 'If someone explained to me what it's all about. If they give me a concrete example of how to teach new contents with this method.' So while Tom sought appreciation of his previous work as a trainer, Lisa sought to have her questions concerning the rationale and suitability of the approach taken seriously.

6.2.3.4.3. More knowledge. Chris, with respect to how his attitude could be improved, said: 'Well, not trying it out myself. I don´t know. More knowledge, perhaps…'.Chris is the only one who refers to knowledge and the need to know more about the approach in the group of trainers. Taking into consideration that the understanding of learning facilitation was quite limited for most of the interviewees, the fact that Chris states more knowledge about the approach as something that could improve his attitude calls for attention.

What the interviewees requested to improve their attitude corresponds very closely to recommendations found in the literature on organisational change processes (Smith, 2006; Vukotich, 2011). Remembering that educational change is less easily accepted by those who are further away from its orientation, it is clear that more

information about its rationale is needed, especially by those critical of it. Luttenberg et al. (2013) found that before giving up training orientations, people need to understand why they should change their practices. Therefore, sense-making in educational change processes is especially important.

6.2.3.4.4. Community of convinced others. Ben stated that his attitude would become even more positive if there were others who were also convinced: 'How my attitude could become more positive? When all the others would see it positive too. There are still many around, who, perhaps due to the term, don´t see it so positively.' In Ben's view attitude improvement is also a social process. According to him, it is positively or negatively influenced by one's social group or peers. Ben's observation is in line with research stating that the influence of colleagues and supervisors plays a central role in the adoption or non-adoption of a suggested organisational change (Oreg, 2006).

6.2.3.4.5. Different terminology. In fact, Ben's suggestion to convince his sceptical colleagues is to use a different terminology. As stated in the section on 'Views on learning facilitation', the term 'enabling didactics' was criticised by many of the trainers. Ben reported resistance and ridiculing of the term. So, using a different terminology was seen by him as being helpful to develop a more positive attitude in his colleagues: 'The terminology is not good. It would have been better to talk about "lifelong learning". The term was badly chosen'. He also said, 'one should eliminate the term "enabling didactics". Delete it without replacement. One should say: 'modern ways of teaching'. That term is not contaminated'.

If a new approach is presented, especially to those who are sceptical about it, a more 'neutral' term may be likely to gain more widespread acceptance. In particular, 'enabling didactics', a seven syllable compound noun in German, is not easily understood. In addition, it is somewhat intellectual and could potentially alienate people even before they have had the chance to find out about what it entails.

The two points stated above -'community of convinced others' and 'different terminology' can both be regarded as reflecting the influence of social factors on the adoption of an educational innovation. Ben said that his attitude towards enabling didactics could still improve further if his other engineers and labour inspectors saw it more positively. He attributes their negative attitude in part to the term 'enabling

didactics' and suggests a change of terminology. Here, Ben touches on the social factors that have been reported by Oreg (2006), who found that resistance increased if the social network of a person was against it. He found that 'employees who were surrounded by colleagues who opposed the change tended to express more negative emotions towards the change' (Oreg, 2006, p. 93). Thus, the way in which colleagues and superiors view the change influences the degree of acceptance (Brown & Quarter, 1994; Nemeth & Staw, 1989). With respect to innovation and change, it might, therefore be advisable for an organisation to mix people who are convinced with those who are less convinced to enable the exchange of different opinions.

6.2.3.4.6. Nothing. Heinrich as well as Peter stated that 'nothing' could improve their attitude towards learning facilitation. Heinrich said that nothing can change his attitude because learning facilitation does not apply to his courses. He is not actually opposed to learning facilitation, as he does not know what it entails. It is just clear that whatever form it takes, it is not for him or his students. Consequently, nothing can convince him. In contrast to the cases of Lisa and Chris, Heinrich is just not interested. Again, he seems emotionally less engaged by the whole change process as the decision not to take part was taken at a very early stage.

Peter's stance can be described as being completely opposite to that of Heinrich. He is so much in favour of learning facilitation that his attitude cannot be improved: 'I think enabling didactics is absolutely super, the only form of teaching that really works. So, my attitude cannot improve, it is already very positive'. However, when probed about what he is critical of, he mentioned the external reasons described previously: 'I do not like about enabling didactics that we do not practice it - and in fact, that we cannot practise it. We lack the resources: the time and the personnel'. Again, Peter identifies many external reasons for why learning facilitation cannot be implemented. It is difficult to say whether this is to be taken at face value or whether it is an expression of 'covert resistance'. Marakas and Horning (2017) describe covert resistance as taking the 'form of overt cooperation and acceptance of the proposed system combined with covert resistance and likely sabotage of the implementation effort' (p. 208). According to Bronkhorst et al. (2013), covert resistance is 'not easily identified as resistance' (p. 80). It is a resistance that is expressed more by what 'persons do not say than by what they say' (p. 80).

The huge discrepancy between his very positive attitude paired with zero implementation calls for attention in the case of Peter. The other interviewees showed a high congruence between attitude and implementation. Therefore, it might be expected that someone who is really convinced of the approach may find some ideas of how to implement it at the organisation where he works. In addition, it is not clear why he, as a convinced subject matter trainer, endorses a training orientation perceived of as consisting predominantly of innovative methodology. Finally, although he himself stated that he thought he had participated in the basic training, although he could not remember very well, two other interviewees, without having been probed about it, said that Peter 'had not even participated in the basic training'. This was perhaps noted and mentioned as he had a prominent role in one of the courses that had been restructured, so non-participation was more evident with him than with other participants. Therefore, very cautiously, Peter's case may be interpreted as a case of covert resistance.

The reason why a person adopts this form of resistance can only be speculated about. In this case, it may be found in the socialization process. As Peter was the only interviewee that was from the former German Democratic Republic, it may have been advisable in his former societal context not to openly voice criticism. Further, as his program was one that was restructured, it was probably not possible for him to be openly against the approach. His way of resisting, therefore, expresses itself in overtly supporting the innovation while resisting it at the implementation level (Marakas & Hornig, 2017). On an organisational level, covert resistance is less easily dealt with than open resistance as the real reasons for resistance are not explicitly stated and are, consequently, more difficult to address.

To summarise, the categories that emerged when investigating ways to improve attitude and decrease resistance were quite specific to the different interviewees. Tom and Lisa expressed personal reasons for their resistance. Heinrich and Peter voiced general reasons. Chris does not really resist but needs possibilities for implementation. Ben, finally, changed his attitude from critical towards acceptance and support.

To address *personal* reasons for resistance, it appears that personalised organisational measures will be required. For others, offering possibilities to implement it are more useful. Addressing resistance may have to take different forms for different people. The case of Heinrich shows that not everyone can or wants to be convinced or have his attitude changed. Nothing could convince him because his resistance is not

against a particular approach. The fact that not everyone wants or can be convinced is probably an important point to take into consideration when thinking about organisational measures at the time of promoting an educational innovation.

Finally, the case of Peter is puzzling. While his attitude towards learning facilitation is seemingly very positive, he did not like the basic training and does not think that learning facilitation is appropriate in the context of DGUV. Triangulating information from various sources, it seems that Peter paid more 'lip service' to learning facilitation and expressed a more positive view during the interview than the one he actually held. It is likely, therefore, that Peter is engaged in 'covert resistance' (Marakas & Hornig, 1996).

6.3. Integrating the results of the interview with those of the questionnaire

6.3.1. Different ways of resisting. As the previous section has shown, resistance to an educational innovation can vary. It may start before even taking part in the measures suggested by the organisation or afterwards. It can be overt by openly stating the critical attitude, or covert, by paying lip service to the innovation but opposing it nevertheless. Additionally, reasons for resistance may be more personal or more external. How far covert resistance and external reasons for non-implementation are associated remains a question for future research. The fact that resistance can take on different forms and have different onset times seems to suggest that with respect to educational innovations, different ways of entering into contact may be adequate for differently critical people. While open personal criticisms may be addressed through dialogue, measures for those openly disinterested or attribute their resistance to external factors are more difficult to come up with.

6.3.2. Motivational profiles reconsidered

One of the results of the questionnaire study was the identification of motivational profiles that differentiated between the intrinsically motivated implementers, the extrinsically motivated implementers and the non-implementers. The groups differed with respect to their attitude towards learning facilitation, their interest in new training methods and their motivation to participate in professional training courses. The interview study corroborated some of the motivational profiles identified in the questionnaire study, namely, the profile of the non-implementers and the extrinsic implementers.

6.3.2.1. Non-implementers: Tom and Lisa. The non-implementers shared the following characteristics: They had a negative attitude towards learning facilitation, had not implemented learning facilitation in their seminars and only went to the professional training measures when it was required by their employer. In addition, they were not very interested in professional development in terms of training methods. In the interview study, Lisa and Tom corresponded well to this profile. They both had negative attitudes towards learning facilitation, only went to the basic training because it was required and were only interested in learning about new methods if it helped to better transmit the subject matter content. Neither of them implements learning facilitation in their seminars. Lisa and Tom also provide the same *kinds of reasons* for their non-implementation: personal reasons that are specific to learning facilitation as an educational innovation and the way it was implemented in the organisation. Stated differently, although their individual reasons were different, the kind of reasons they provided were the same. In addition, the qualitative interviews with Tom and Lisa give a 'human face' to the non-implementers and help in understanding what motivated them not to take up learning facilitation. It also allows to get a feel of what non-implementers are like as 'real persons' rather than as abstract categories.

6.3.2.2. Extrinsic implementer: Chris. Chris lies somewhere between the non-implementers and the extrinsic implementers. His attitude towards learning facilitation is not as critical as that of Lisa and Tom but 'ambivalent'. He is not completely against it and much more pragmatic with respect to implementation. His pragmatic is reflected by his attitude: As long as it works in practice, he is neither much in favour nor much against it and he will implement it when the organisation that hires him requires it. Although he has not implemented learning facilitation yet, his profile seems to correspond with the extrinsic implementers identified before. The fact that Chris, in contrast to the extrinsic implementers, has not yet implemented learning facilitation has a practical reason: The constructivist version of the training course, in which he teaches, has not been launched yet.

Apart from providing rich detail about the experience of an extrinsic implementer, the interview with Chris expanded on the results of the questionnaire in a further way. One hypothesis that I had when looking at the profile of the extrinsic implementers was that they may be prone to burnout as they implement an educational innovation that they do not really believe in. However, the case of Chris shows that

extrinsic implementers may also be emotionally detached in a pragmatic way - implementing what is required by the employer without being very affected by it. However, on a cautionary note, it is important to note that what is true for Chris may not be true for others. His interview serves as an illustration of how one particular trainer, a freelance trainer working independently takes on learning facilitation in an extrinsically motivated way. It is most likely that other forms of extrinsic implementation exist and that in interviews with different extrinsic implementers, different experiences would be captured.

6.3.2.3. Principled resisters: Peter and Heinrich. The interviews with Heinrich and Peter offer a valuable expansion of the conclusions of the questionnaire section of the study. As there is little or no correspondence with the profiles that have been found, the two cases form a new, separate 'category' of very autonomous or principled non-implementers. At first glance, Peter and Heinrich seem very different from each other. However, when examining their characteristics in more detail, various similarities can be found: They both have a strong subject matter focus; neither implements learning facilitation; neither is interested in methodological training; and most importantly, neither has participated in the basic training course although it was a requirement of the employer. In addition, the ways in which they express their resistance or explain their non-implementation of learning facilitation is similar: They both refer to general external reasons such as DGUV's mandate, time and staff constraints or to the general fruitlessness of educational reforms.

Peter and Heinrich dropped out of the educational change process early - before even taking part in the organisational measure aimed at promoting it. If their reasons for resistance are considered, i.e. learning facilitation not being DGUV's mandate or educational reforms not bringing about any notable changes, dropping out early is a logical consequence as nothing concerning the *specific educationaal reform* could change their minds. Their reasons for objection are of a more general nature. Consequently, and in contrast to all other interviewees, neither Heinrich nor Peter identified ways by which their attitude towards learning facilitation could be improved.

Whilst their reasons for non-participation are similar, the *form* how they chose to express their resistance is different. Heinrich stated his opposition openly whereas Peter did it covertly. These different forms of expression may be due to different historical socialization contexts. In addition, the segment that Peter is responsible for was directly

involved in the reform as it was one of the segments that was restructured. Consequently, open criticism or opposition may not have been as easily voiced as it was for Heinrich whose course wasn't restructured. In addition, he is in charge of a privileged professional group which can more easily claim that 'different' rules apply to them. In fact, this was what Heinrich stated when he said that 'learning facilitation doesn't apply to my courses'. These different forms of expressing their resistance become apparent with regard to the attitude they claim to have towards leaning facilitation: While Heinrich concedes that he does not really know much about it, Peter appears to pay lip service to it by appearing to be very much in favour of it. Based on the similarities described above and their principled decision to put their own convictions over and above those of the employer, Heinrich and Peter are grouped together in a fourth motivational profile, which is called 'principled resisters'. They seem to resist on the basis of general rather than specific principles.

The table 23 shows the integrated results of the two parts of the study:

Table 23. Motivational profiles for uptake/non-uptake of the innovation

	Intrinsic Implementers	**Extrinsic Implementers**	**Non-implementers**	**Principled resisters**
Characteristics RoE =Requirement of Employer + = positive o = neutral - = negative (Questionnaire)	• Attitude + • New methods + • RoE -	• Attitude o • New methods o • RoE + • Older trainers	• Attitude - • New methods - • RoE + • Younger trainers	• Attitude +/o • New methods - • RoE -
Reasons for implementation (Questionnaire)	• Like the challenge • Wish to grow professionally	• Requirement of the employer		
Reasons for non-implementation (Questionnaire)		• Not enough time for implementation • No seminars for implementation	• Not convinced of the approach	
Reasons for non-implementation (Interview)		• Safety officer training not yet finished	• Superiority of approach not proven • Doing it already • Lack of appreciation of previous work	• Not DGUVs mandate • Not enough resources • Educational reforms are not necessary • (Covert/Overt versions)
Kinds of reasons given for resistance/non-implementation (Interview)		• External – specific	• Personal – specific	• External – general
Interviewees		• Chris (waiting)	• Lisa, Tom	• Heinrich, Peter
Ideas for attitude improvement		• More knowledge	• Respond to personal criticism	• Cannot be improved

The table shows how the different interviewees fit within the motivational types identified in the questionnaire section of the study. In addition, the fourth category of principled resisters has been incorporated to accommodate Peter and Heinrich, who did not take part in the basic training. This category is an expansion of the typology identified from the questionnaire data as it captures the motivations and ways of thinking of those dropping out at an early stage. Those are frequently not included in studies on educational innovations as they are difficult to recruit.

In the study by den Brok et al. (2014) on teacher professional learning, motivational profiles ranged from ‘extremely autonomous’ to ‘externally motivated’, where the externally motivated teachers only participated in professional development measures because they felt external pressure to do so. They were, therefore, very much like the non-implementers in this study. Along the same lines, Ketelaar et al (2012b) identified teachers in their ‘reserved’ group who implemented the coaching role only partly and reluctantly - which is similar to the behaviour of the extrinsic implementers found here. However, none of the studies on teachers’ motivational profiles identified a profile of educators who, out of their own conviction, dropped out so early that they did not even participate in the suggested measure or reform.

In a field other than education, Matsumoto and Takenaka (2004) found an ‘amotivation profile’ in their study on physical exercise in which people ‘do not know why they exercise’. However, although they did not know why they exercised, they still did it. Thus, it is rare that motivational profiles include those who do not participate. Therefore, the identification of this fourth category adds to the existing body of research on motivational profiles by providing insights into the thinking of those who drop out early or do not participate at all.

6.3.3. Conclusion of the interview part of the study. To conclude, the interview part expanded on the questionnaire part by identifying a further motivational profile which was labelled ‘principled resisters’. Implementer profiles varied with respect to attitude, new methods and the requirement of the employer. For the non-implementing types, profiles also varied with respect to the kinds of reasons they used for their non-implementation. The motivational profiles that emerged provide an overview of how educators’ attitudes, their general motivations to train and to develop as well as their reasons for not taking up a reform interconnect. They give a clearer picture of who will and who will not be likely to take up learning facilitation. In addition, it hints at what measures are suited for which implementer type.

Chapter 7: Discussion and Conclusion

7.1. Introduction

In this final chapter, the findings of this study will be discussed in relationship to the factors contributing to teacher change, models of educational change and models of resistance to change that were presented in chapter two. While doing so, the specific contributions of this study to the issues in question will be highlighted.

7.2. Key findings

7.2.1. Key finding 1. Uptake of an educational innovation varies

One of the key findings of this study was that uptake of an educational innovation, learning facilitation in this case, is not an 'either/or' process but one that varies. Uptake was either intrinsically or extrinsically motivated while the non-uptake due to resistance was either specific or general. A key finding of this study is that different ways of uptake exist.

The fact that educational reform messages are being received differently by different people was already known from the research literature. Gregoire (2003) found that these can lead to either a 'true conceptual change', a 'superficial change' or to 'no change'. Brody and Hadar (2011) described stages of 'stasis', 'withdrawal' and 'change' during the adoption of an educational innovation.

The contribution of this study, however, is going beyond the mere description of such differences in uptake by having identified 'motivational profiles' of different implementer types. They showed how similar attitudes, motivations and knowledge about the educational reform can be found clustered together, thereby forming implementer types. Although this was not originally the aim of the study, the profiles emerged during the analysis of the attitudes and motivations of the trainers to take up or not take up the reform.

Motivational profiles have been developed outside (Matsumoto &Takenaka, 2004) and within educational research (den Brok et al., 2014). Motivations to teach an innovative subject have been researched by Gorozidis and Papaioannou (2014). However, combining the research on the uptake of innovative teaching and the research on motivational profiles into motivational profiles on the uptake of educational innovations, is a contribution of this study. Yet, why is the identification of motivational profiles for the uptake of educational reforms at all important?

First, results relevant to the research on the taking up of educational innovations emerged when *subgroups* of implementers were analysed. Stated differently, the identification of implementer types helped to discover relationships in the data that would otherwise have not been found. This was true, for instance, for the effect of age on implementation and the effect of extrinsic motivations on uptake. Both variables were not significant when considering the entire group of trainers but became so when analysis was done across implementer types. This finding bears on future research on the uptake of educational innovations as it suggests that looking at subgroups of uptakers may be a worthwhile endeavour.

Second, identifying different implementer types has profound implications on those who want to implement educational reforms. As the profiles provide detailed information about how and where implementers differ and with what kind of arguments they can be reached, the profiles are useful in designing targeted measures for different implementer types. This idea will be followed up in more detail in the section 7.2. on 'implications for practice' below.

Third, a motivational type of 'principled resisters', has been identified. These educators drop out so early in the reform process that they are hardly ever included in research on the topic. Looking for such early drop-outs when researching educational reforms may be fruitful, as this study has shown, as they can provide valuable insights about non-uptake and resistance. These may differ from those of other types of non-implementers. Without the inclusion of the 'principled resisters' important reasons for non-implementation of educational reforms would have been missed. Therefore, care should be taken to try to include those who are normally not included.

Finally, this study expands on the majority of studies on motivational profiles in education (den Brok et al., 2014; Vansteenkiste et al., 2009) as the profiles here do not just contain information about motivational aspects but include, in addition, aspects relating to knowledge and attitudes. Thereby, the yield a much more complete picture of the characteristics of the educators involved. Knowing not only that different trainers have different motivational profiles but knowing where and why they differ, adds to the research on motivational profiles, which had not as yet addressed the issue of educational reforms.

7.2.2. Key finding 2. Uptake of an educational innovation is dynamic.

The results of this study also showed that attitude changes occurred *across* and *within* implementer groups. Ben, for example, changed his attitude from negative to positive; he changed across groups from a non-implementing to an implementing group. Lisa's attitude, on the contrary, seemed to have become more negative over time. Conversely, the intrinsic implementers' change towards a more positive attitude is an example of an attitude change *within* a group

These results are important as they show that the uptake of an educational innovation is not static but can develop over time. Attitudes can change from negative to positive and from positive to even more positive. This is in line with what Brody and Hadar (2011) described in their process-oriented model on teacher change. They found that even intrinsically motivated educators, who participated voluntarily in a measure on educational innovations, passed through stages of withdrawal and resistance during the uptake process. This study expands on these results by showing that slight changes in attitude take place constantly. The identified implementer profiles cluster together certain characteristics of trainers who tend to react in a specific way. It is, however, worthwhile remembering that the identified profiles are a snapshot in time and that implementers' attitudes can change. While different trainer types exist, which go along with certain predispositions to (not) take up learning facilitation, the uptake is also a dynamic process and attitudes can change.

7.2.3. Key finding 3. Uptake is possible at an advanced age

The majority of studies, cited in chapter two, found no effect of age on the uptake of educational innovations. Those studies that did find an effect suggested that older age (Brody & Hadar, 2015) or a very advanced career phase such as 'career-wind down' (Huberman, 1989; Maskit, 2011) was related to a *negative* effect on uptake. Contrary to these findings, however, the results of this study found two incidences in which older trainers took up the educational innovation proposed. First, Ben, one of the oldest trainers of the group was someone who not only took up learning facilitation but, in addition, changed his attitude quite radically from critical to positive. This showed that an engineer at the stage of career wind-down/retirement can take up an educational innovation. This finding contrasts with the finding reported by Brody and Hardy (2011), for instance, who reported that veteran teacher educators hardly ever took up an educational innovation. Considering, in addition, the research on the slowness and

difficulty of attitude change within the process of educational innovations (Hermans et al., 2008; Zhu, Valcke & Schellens, 2008), this change is quite notable.

However, it may be argued that this is just one exceptional case. Yet, this study also showed that, generally, the older trainers in this sample adopted learning facilitation to a higher degree than the younger ones did. Whereas the older trainers implemented learning facilitation mostly out of extrinsic motivation, the younger ones just did not implement it if they were not convinced. Comparing the group of older trainers with the case of Ben, it appears that Ben seems to represent a genuine change in attitude towards an intrinsic uptake, whereas the older trainers may be more prone to taking up the approach out of a sense of duty.

Therefore, the rationales underlying uptake at an advanced age are different in the two cases. However, as both are in contrast to what is reported in the literature, it may be worthwhile to examine the issue of age and uptake further in future research. However, rather than looking at uptake and age per se, which was not a significant result in this study, looking at specific implementer groups and age may be more promising.

7.2.4. Key finding 4. Reasons for non-implementation and resistance vary

This study found that the non-uptake of an educational innovation was not uniform but varied. Three different types of non-implementation emerged in this study: The first was non-implementation due to external obstacles. A second type of non-implementation was based on resisting the educational reform for *specific* and *personal* reasons. Finally, a last form of resistance was non-implementation for *general* or *principled* reasons. Oreg (2006) differentiated between affective, cognitive and behavioural resistance, depending on what exactly is resisted and how. Here, all resistance was found on the behavioural level (non-implementation). This study thus complements and expands on Oreg's findings by showing that non-implementation, that is, behavioural resistance, can be differentiated further and is, in itself, not uniform.

The finding of the three types of non-implementation is specific to this study and it is not clear to what extent it can be applied to other contexts. However, it is important to note that non-implementation does not equal resistance and that more than one type of resistance or non-uptake exists. Therefore, clearly defining what counts as resistance and what kind of resistances will be investigated may be helpful in future studies. In

addition, from an organisational point of view, it is also important to consider why a person resists and what exactly is resisted.

7.2.5. Key finding 5. Kinds of reasons are implementer-type specific

A final key finding of this study was that different non-implementing types used different *kinds* of arguments to explain their non-implementation. It appears that the correspondence of non-implementer type with the kind of arguments used is not a coincidence but makes sense with respect to the underlying processes involved. First, there are the non-implementers who do not implement due to specific external reasons - this is not resistance but mere non-implementation. As soon as the external conditions for implementing are created, implementation will take place. Second, there are the non-implementers who give personal reasons for their non-adoption. Here, it seems that some sort of intention to make sense of the educational innovation has begun (Kelchtermans, 2011). It may be speculated that the sense making effort was frustrated at some point due to a lack of explanation or understanding. In line with the findings of Bronkhorst et al. (2014), who state that resisting is a type of engagement with the educational change, it would seem that trainers that resist an educational innovation on a *personal* level are already actively engaging with it and have tried to accommodate it within their own educational conceptual frameworks. In line with this interpretation is the fact that the two non-implementers of this study mentioned several ways to ameliorate their resistance. Personal criticism and a personalised resistance, easily identifiable by use of the word "I" *(I am not convinced, I didn´t like the hype*), may hint at the fact that there is a point of entry for dialogue for the organisation. Personalised criticism can help in identifying at which particular point the personal sense-making process of the trainer was frustrated[9].

Finally, if trainers don´t believe in educational reforms for general external reasons, then it is clear that further engagement with the educational innovation does not make sense for them. In this last case, there is less sense making involved. This may also explain why drop out occurs early: If it does not apply, why bother with the educational reform? This shows the highly principled decision that underlies this manner of resisting. The trainers strongly believe in their own criteria for non-

[9] However, this does not necessarily mean that everyone who voices a personalised criticism will be modify their views if only their arguments are heard.

participation. Therefore, there seems to be an internal logic to the different kinds of arguments for non-implementation found in the different implementer types. In how far these are specific to this study or can be found in other cases also are issues for future research.

7.2.6. Summary of key insights. This study showed that the uptake of an educational innovation is not uniform but that different forms of uptake exists. Four motivational profiles have been identified that describe if and how the educators in these groups will take up learning facilitation. The attitude towards the educational innovation predicts its uptake. In contrast to other research findings, age has found to be positively correlated with uptake. Resistance to change is also not uniform and different ways of resisting can be identified. The ways of justifying resistance are implementer-type specific. Looking at implementer *types* in addition to the whole sample may be useful for the detection of differences when investigating educational reforms.

One of the general questions asked in the beginning was whether studies on educational change processes stemming from research on teachers can shed any light on the processes at work when OSH trainers take up an educational innovation. In this study, many similarities were found. As in the research on teachers, this study found that the uptake was dependent on trainers' teaching orientation and attitude towards the educational innovation. This is contrary to what might be expected. While teachers can be expected to come to their jobs with a high interest in teaching, professionals specializing in occupational health and safety may not have teaching as their first professional motivation. However, the results suggest that research on trainers of occupational health and safety may cautiously draw on research stemming from school and university contexts when investigating issues related to educational change processes. At least in this study, great overlap with the research on teachers has been found, especially with the effect that attitude has on the adoption of educational innovations and with the effect that trainers' orientation has on their uptake. One explanation might be that OSH trainers, who teach although it is not their main profession, also hold strong beliefs about what good teaching is.

7.3. Transferability

Transferability addresses the question of how far the results of this study are transferable to other contexts. As the sample of the quantitative part was a non-probabilistic sample, generalization is limited. Also, the study as a whole was rather

exploratory in nature, statistical generalization was not its aim. Rather, its objective was to generate ideas that may be tested in subsequent research. However, practical ideas concerning implementation of educational reforms and the idea that differently motivated implementer types may exist seem to be results that may be transferred, with due caution, from this study to other contexts.

7.4. Limitations

7.4.1. Participants. The sample size of the questionnaire part was small. Fortunately, it was just about sufficient for the tests that were carried out. A larger sample size would have increased the overall power. However, this was not possible as all participants of the 10 basic trainings had been included in the study already. In addition, it has to be remembered that the sample was a convenience sample, so generalizing from it to other trainers who become learning facilitators may be limited.

A further limitation is that critical trainers responded in far lower numbers than those convinced of learning facilitation. The fact that mainly the motivated trainers take part in corresponding studies has been reported in the literature, for example by den Brok et al. (2014). This limitation is in part counterbalanced by the in-depth interviews with the critical trainers in the second part of the study.

7.4.2. Instruments. One of the limitations of the questionnaire was that it relied on self-reports of implementation. As Hoekstra, Brekelmans, Beijaard and Korthagen (2009) point out, teachers' self-reports about behavioural changes in the classroom do not always correspond to what they actually do. Kennedy (2016) put it as follows: 'teachers can learn and espouse one idea, yet continue enacting a different idea, out of habit, without even noticing it' (Kennedy, 2016, p. 947).

7.4.3. Degree of implementation. A further limitation is that the degree of implementation is not clear. Have trainers just tried out some methods from the toolbox or did they, in addition, try to take on the facilitator and process-oriented stance throughout their teaching? The extent of implementation could, for instance, be investigated by interviewing implementers or by using questionnaires that address this issue more directly. The degree of implementation seems to be important to evaluate the success of the reform. If the degree of implementation is superficial or low, like only using some methods from the toolbox in some seminars, no real constructivist change in learning is likely to happen.

7.4.4. Data collection. Of the six interviews, two and a half were not recorded. Therefore, it may be argued that rigor might have been affected. However, as interviewees spoke more openly without the recording, it may be argued that although rigor was reduced, trustworthiness increased.

7.5. Directions for future research. Timperley, Wilson, Barrar and Fung (2007) found that the kind of motivation teachers espoused when taking part in professional development measures affected the amount and quality of what was learnt. With respect to this study, it would be interesting to explore to what extent the implementer type affects the quality of implementation. From the findings presented here, one would expect a difference in perseverance and persistence in the intrinsic implementers and a more pragmatic approach in the extrinsic implementers.

In addition, extrinsic implementers are a valuable group for further research. Extrinsic implementers are far less prominent than the intrinsic implementers, the non-implementers and the principled resisters, who are rather pronounced in their views and perhaps more recognizable within an organisation. The extrinsic implementers are not as easily detected as they are more silent and more complacent. However, as their attitudes are more favourable towards learning facilitation, they may be more easily 'convinced' of learning facilitation. Similarly, if not paid attention to, they may change their attitude slowly towards an increasingly negative one. Investigating what exactly motivates this group and what kind of support they need would be worthwhile.

A key finding of this study was that the kinds of arguments used was implementer-type specific. As stated before, it would make sense to explore that issue further to see if this is an emerging pattern or if this was a finding specific of this study.

Finally, forms of covert resistance, in the context of educational change processes seem like an interesting topic for further research. Identifying how to recognise covert resistance may also be helpful for qualitative researchers who, in general, would like to believe the trustworthiness of their interviewees. Ethical principles of how to deal with such cases and further research on the topic may therefore be helpful for researchers and interviewees alike.

7.6. Implications for practice

In the following section, recommendations for practice informed by the research will be suggested.

7.6.1. Consult research on educational change processes. When introducing an educational reform, general training and information measures are often planned by management. Sometimes, convincing events, explaining the rationales for the change, are followed by training or other professional development measures. However, rarely is a more individualised approach taken. The results of this study suggest that trainers with different attitudes towards an educational change may benefit from other ways of being informed about and supported during the process. It seems that there is a clash between what is known from research on change processes in general and what occurs in educational organizations trying to implement the change.

For example, many managers still operate as if educational change is a unidirectional process (Niederhauser & Stoddart, 2001), which is most effectively operated in a top-down manner (Tondeur et al., 2007). However, if teachers feel pressured, they are more likely to resist the intended educational innovation and may even teach worse than they did before (Kennedy, 2011). Piderit stated that a change process is best begun by 'engaging a small group of managers in identifying the desired change and later aiming to gain broader employee support for that proposal' (Piderit, 2000, p. 791). Much more useful, however, would be to conceptualise a change not as a planned process (Porras & Silvers, 1991) but as a continuous process in which 'ongoing adaptation and adjustment' occur (Weick & Quinn, 1999, p. 362).

What emerged from this study is that there are different types of adopters of an educational change process. While some may happily adopt educational innovations mandated from above, those whose teaching orientations are not in line with the suggested reforms will not be convinced by top-down messages. What seems to be most important is to use a differentiated approach. That is, different strategies are to be used for different types of educators, depending on how close or how distant their educational orientations are from the innovation.

7.6.2. Addressing different educators differently. While the intrinsic implementers may be happy to adopt and implement an educational innovation wholeheartedly, independently of whether or not it is implemented from above,

extrinsic implementers, non-implementers and very critical educators have to be addressed differently. Strictly speaking, the intrinsic implementers do not need to be convinced of the educational innovation as it is in line with their teaching-related attitudes. They need opportunities for implementation - seminars to begin implementing the innovation as well as sufficient training opportunities to keep up their high motivation. As they are very engaged, they can also be actively involved in the change process: As they are happy to implement learning facilitation in spite of challenges, they may, for instance, be given more difficult cases and courses.

The extrinsic implementers, however, should be provided with more factual information about the change to foster their understanding of why the approach is superior to other forms of training and how they as trainers can contribute to it. In line with Oreg´s (2012) observation on the effect of peers on the uptake of an innovation, one could think about pairing an extrinsic implementer in a team with an intrinsic implementer so that the extrinsic implementer is supported by someone who is convinced of the approach. In addition, regular question and answer sessions about constructivism and learning facilitation, can help to feed their interest and to sustain their motivation to implement it.

For the non-implementers and the critical trainers, still other forms of support may be fruitful. Here, a more individualised approach is needed as the reasons for resistance are varied. Information about the superiority of the approach, appreciating previous work as well as offering practical examples and solutions are only some examples of what would enable deeper contact with the critical trainers. Different forms of entering into discussion about doubts and resistances may be needed. Depending on whether resistance is to be found more on the cognitive, affective or behavioural level (Oreg, 2010), different forms of entering into a discussion may be required. Piderit (2000) suggests individualised measures for those who are not convinced. Mixed working groups have shown, in this study, to be effective in changing a critical person’s attitude. Including non-implementers in working groups in which they can maintain their expert status while, at the same time, remaining in contact with those in favour of the approach may be a good way to support new ways of thinking in a non-threatening environment. Following Oreg (2006), mixing groups helps in the working context as well as in informal gatherings.

In short, a ‘constructivist approach’, understood as paying attention to individual needs of those who involved in an educational change, should also be followed when addressing issues of adopting an educational innovation. As the starting points for different educator types are different – in the sense that their own frame of reference (Ketelaar et al., 2012a) is either very close or very far away from the orientation of the innovation – some educators will need more information, different kinds of support and more space for explanations than those who are already convinced. If constructivism means connecting well with the previous knowledge structures of the learners, in educational change processes, different offers should be made to those whose knowledge structures concerning the reform are different. In a way, the approach to the change process suggested here is similar to what is called ‘microtargeting’ in marketing research (Barbu, 2014) and which is defined as a way to create ‘personalised messages’ (Agan, 2009). The idea is to use the knowledge about the teaching preferences of the different implementers to address each group with what they need most in order to engage with the educational reform.

As previously shown, the more critical groups were motivated by subject-matter oriented trainings and opportunities for exchange. Presenting substantial facts about constructivism and entering into contact in conversational circles, in which exchange is possible, could help to open up the discussion. In such formats, experienced trainers could remain in their expert role, hence minimising the feeling of being taught like a novice. In addition, if a more individualised approach and more exchange related formats are chosen during a change process, the process itself becomes less top-down and more participatory.

7.6.3. Good branding. Marketing research shows how different names evoke different feelings and speak to different sorts of people. Therefore, choosing a good ‘brand’ name for the educational reform may be recommendable. The interviewees mentioned that the name of the new didactical approach reinforces the negative attitude trainers already have towards the innovation. It might benefit from a name that is likely to be acceptable to more sceptical educators, thereby offering more space for identification.

Table 24 shows the different implementer profiles together with their needs and the suggested organisational measures. In addition, specific formats that could be used to create the measures are suggested.

Table 24. Organisational measures and formats depending on implementer type

	Intrinsic Implementers	**Extrinsic Implementers**	**Non-implementers**	**Principled resistors**
Need	Get started Get methods	Clear instructions: What, when, how	Be taken seriously in their criticisms Get answers to their questions	Be left alone Be able to do their own thing
Organizational Measures	Training tools & methods Opportunities to get started Basic Training well suited	Pragmatic instructions Clear directions More knowledge about rationale Regular support	Explanation of rationale Concrete examples of what is to change in which way and why Appreciate previously done work	Invite without pressure Value their engagement as trainers Concentrate on their strengths
Format	Exchange experiences and implementation successes and failures (collegial support groups) Further methodological training updates	Concrete support during implementation (e.g. coaching, observation and feedback) Regular events about the approach and rationale of the approach Mixed trainer teams with intrinsic implementers	Integrate as expert in a working group Spaces to exchange opinions informally or in small groups Pair with convinced implementers Provide scientific evidence and rationale for the change (facts and figures) Show how content and subject matter teaching are commensurate with constructivism Provide specific measures for those who are not convinced. Address different needs than those who are convinced. Participatory, identity preserving and voluntary offers	

Finally, one must acknowledge that attitude change is a slow process. Offering prolonged exposure to the new educational approach in the form of trainings and factual information as well as providing opportunities for informal exchange and organisational support appears to be effective in initiating such an attitude change. However, it also has to be accepted that not all will, eventually, modify their attitudes and that some trainers' attitudes will not change at all.

7.7. Educational innovation and risk taking in a risk-aversive context

Implementation of an educational innovation implies risk taking (Le Fevre, 2014). An educational change based on constructivism involves changing from trainer to learning facilitator, who is confronted with less structured and more process-oriented ways of teaching. This implies more risks than presenting a prepared presentation, as it involves dealing with situations of uncertainty such as groups' dynamics or unexpected twists in the seminar. Stated differently, the final outcome of the process is open and cannot always be foreseen. Therefore, even for those who are absolutely in favour of constructivist innovation, the change towards learning facilitation implies taking risks (Boege, 2015). However, if the educational change is not in line with one's teaching orientation, facing these risks of less structure and non-predictable outcomes may feel even more risky. As one of the primary aims of the German Social Accident Insurance is to prevent work-related risks and hazards, it might be speculated that in an organisation that focuses so strongly on issues such as risk assessment, risk analysis and risk prevention and that promotes risk prevention campaigns, such as 'Risiko raus' ('go away risk'), risk taking may be especially difficult, if only within the training area. In addition, it may be hypothesised that the organisation attracts more professionals who are interested in safety and risk prevention so implementing an educational change that implies more risk taking may be a particular challenge in this specific organisational context.

7.8. Conclusion

The launch of an educational innovation often consists of a set of organisational measures such as information and training. Recently, more individualised support during implementation has also been offered (Hoekstra et al., 2007). Normally, however, identical or similar measures are offered to the educators involved. The results of this study suggest that a more differentiated approach is required if educational innovations are to reach their aim, as trainers differ with respect to their motivation and attitudes when it comes to adopting.

Those already convinced of the approach may be well served with training measures directed at how to implement it. They only need the tools and opportunities to get started. Those who are sceptical or critical will need spaces where the rationale for the innovation can be discussed (why should we do it?), where scientific evidence of

superiority of the approach is presented (why is it better?) and where the supposed improved outcome of the innovation (why should we change?) can be reflected upon.

These differences have profound implications for organisations that want to promote an educational innovation. Knowing about different implementer types may be helpful in aligning educational change processes and measures in such a way that they address the different preconceptions differently. The motivational profiles suggests that tailor-made interventions and differentiated courses of action may be more appropriate than a one-size-fits-all approach. Specifically, special approaches are required for sceptical and critical trainers as their needs for clarification are more pronounced.

As, in recent times, many pedagogic reforms have moved in the direction of constructivism, special measures for the less convinced may involve the provision of evidence for the superiority of constructivism, the discussion of common myths and misconceptions about it as well as a space to enter into deeper discussions. It is important to find formats and contents that allow trainers to maintain their identities as experienced professionals and their sense of authority.

This study has shown that adopting an educational innovation is not an either/or process and that different forms of uptake exist. The particular form it takes depends on the combination of the trainers' attitude towards it and their general motivations to work as trainers and to develop professionally. Resistance, too, is not uniform. It can be based on practical, specific or general reasons. So, when thinking about educational innovations in the future, organisations can use this knowledge to design and offer measures that are explicitly targeted at the motivated, the sceptical and the critical educators. As social factors were found to play an important part in the uptake, exploring how to mix different implementer types within training sessions may be worthy of attention.

Not everybody will be reached by an educational reform. Its uptake is a dynamic process, in which change may but need not happen. Some educators will change, some will change to certain degrees, and some may drop out of the process altogether. For those who are far removed from the orientation of the reform, perhaps concentrating on their strengths as trainers rather than on their weaknesses in not adopting the approach may be preferable to trying to change them at all costs.

Educational reform processes are never easy. Knowing what differentiates those who take up an innovation early and those who do not may help to understand the complexities involved. Ultimately, dialogue and reflection on positions as well as considering unconventional approaches to promote educational change may help to stimulate discussion and promote understanding among trainers, educational planners and the upper management level.

Finally, the fact that the most profound attitude change in this study was achieved by a measure that wasn't aimed at changing an attitude, points in the direction that rather than thinking about 'measures' directed at educators to adopt an educational innovation, creating interdisciplinary working groups that are given tasks that are in line with the planned reform may be more effective in bringing about the desired changes. Stated differently, thinking about a more 'constructivist' implementation of the constructivist educational reform process may be a promising way forward.

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9. Annexes

Annex 1: Online Survey: Covering Email English

Basic Training for Learning Facilitators – your experiences

Dear Sir or Madam,

Some time ago you participated in the „Basic Qualification for Learning Facilitators" at the Institute for Work and Health in Dresden.

Today, we would like to ask you how you have developed on your way from trainer to learning facilitator. We would be happy if you would share your experiences with us in the following online questionnaire. We are interested in all kinds of experiences.

Filling in the questionnaire implies consent to participate. Participation in the survey is absolutely voluntary, the questionnaire is anonymous. The survey takes between 15 to 20 minutes to answer. You can fill out the questionnaire from today onwards until October 28, 2016.
If you would be willing to be contacted for an interview, please fill in your contact data at the end of the survey.

In this case, the survey is no longer anonymous, but confidential, i. e. they will not be accessible to third parties. The aim of the study is to explore experiences related to the implementation of learning facilitation. It is carried out by King´s College London in cooperation with the Institute for Work and Health.

Thank you for taking part in the survey!

Please click on the following Link to get to the online survey. Your TAN is: AWP8K
If you have any questions about the study please contact Katrin Boege (katrin.boege@kcl.ac.uk).

With kind regards,
Katrin Boege

Annex 2: Online Survey: Covering Email German

Basisqualifikation für Lernbegleiter – Ihre Erfahrungen

Sehr geehrte Damen und Herren,

vor einiger Zeit haben Sie an der „Basisqualifikation für Lernbegleiter“ am Institut für Arbeit und Gesundheit in Dresden teilgenommen.

Gerne möchten wir erfahren, wie Ihr Weg zum Lernbegleiter bzw. zur Lernbegleiterin seitdem verlaufen ist. Bitte teilen Sie uns in folgendem Online-Fragebogen Ihre Erfahrungen mit. Wir sind an jeder Art von Erfahrungen interessiert.

Die Teilnahme an dieser Befragung ist absolut freiwillig, die Befragung selbst ist anonym. Die Bearbeitungszeit beträgt zwischen 15 und 20 Minuten. Sie können den Fragebogen ab heute bis zum 28. Oktober 2016 ausfüllen.

Wenn Sie nach der Befragung bereit sind, gegebenenfalls für ein kurzes Interview zur Verfügung zu stehen, geben Sie bitte Ihre Kontaktdaten am Ende des Fragebogens an.

In diesem Fall ist die Befragung nicht mehr anonym, jedoch vertraulich. Das heißt, Ihre Daten werden nicht an Dritte weitergegeben. Ziel der Befragung ist es, erste Erfahrungen mit der Umsetzung der Lernbegleitung zu erheben. Die Studie wird vom King‘s College London in Kooperation mit dem Institut für Arbeit und Gesundheit durchgeführt.

Bereits jetzt vielen Dank für Ihre Teilnahme!

Bitte klicken Sie auf folgenden Link, um zur Umfrage zu kommen. Ihre TAN lautet: AWP8K

Wenn Sie Fragen haben, wenden Sie sich bitte an Katrin Boege (katrin.boege@kcl.ac.uk).

Mit freundlichen Grüßen
Katrin Boege

Annex 3: Online Survey English

A. General Information

1.) I work …
- in a statutory accident insurance organization
- in the German Social Accident Insurance (DGUV)
- in a public institution with affinity to OSH topics (for instance ministry)
- in a private company
- independently
- Other:

2.) I work as… (multiple responses possible)
- labour Inspector with training activities
- full-time trainer at a statutory accident insurance
- employee at a statutory insurance with training activities
- training Manager at statutory accident insurance
- free-lance trainer
- OSH expert with training responsibilities (in an institution other than the DGUV)
- Other:

Education:

3.) I am a(n)…
- engineer/Natural Scientist
- social Scientist/Economist
- psychologist
- educational Scientist
- master craftsman
- technician
- Other:

Gender:

4.) I am
- Male
- Female

Age:

5.) How old are you?

20 – 30 yrs
31 – 40 yrs
41 – 50 yrs
51 – 60 yrs
Over 60

B. Work as a Trainer

6.) **Please estimate your expertise as a trainer:**
- Beginner
- Advanced
- Expert

7.) **For how long have you been working as a Trainer?**
- Less than 2 years

- Between 2 and 5 years
- Between 6 and 10 years
- More than 10 years

8.) **My work as a trainer (lectures, seminars, trainings) comprises**
- Less than 10 % of my working time
- Between 10% and 25 % of my working time
- Between 26 % and 50 % of my working time
- More than 50 % of my working time

9.) **Do you have a formal trainers´ certificate?**

Yes
No

10.)**If so, which one?**
- Train-the-Trainer Certificate of the DGUV
- Other :

11.)**Do you have a formal qualification as a coach?**
- Yes
- No

12.)**Please specify what motivates you to work as a trainer (multiple responses) ***

	Totally agree	Partly agree	Partly disagree	Totally disagree
I like to convey subject knowledge				
I like to accompany seminar participants in their learning processes				
I do it mainly because it is part of my job description				
I like to interact with seminar participants				
I like to learn and develop myself				
Other:				

C. Learning Facilitation

13.)**Please estimate your expertise as a learning facilitator**
- Beginner
- Advanced
- Expert

14.)**For how long have you been working as a learning facilitator?**
- Less than 12 months
- Between 1 year and 3 years
- More than 3 years
- I have not yet worked as a learning facilitator

15.)**How did you train to be a facilitator? (multiple responses allowed)**
- In the course „basic training for learning facilitators“ at the Institute for Work and Health
- Training/seminar of my statutory accident insurance

- IAG Conference on constructivism 2012
- IAG Conference on constructivism 2014
- Others (please specify trainer, organizer and duration)

16.) **What are for you the central points of learning facilitation? Please put down up to three points:**

17.) **What were your main motivations to participate in the "Basic training for learning facilitators"? (multiple responses)**

	Totally agree	Partly agree	Partly disagree	Totally disagree
Interest in the topic				
Requirement of employer				
Exchange with other seminar participants				
To get a certificate				
To get to know new training methods				
Other				

18.) **What motivates you generally to develop professionally as a trainer? (multiple responses)**

	Totally agree	Partly agree	Partly disagree	Totally disagree
Update my subject matter knowledge				
To get to know methodological and didactical innovations				
Pursuit of new career options				
Request of employer				
Exchanging with other participants				
Other:				

19.) **How has your organization supported you on your way to become a learning facilitator? (multiple responses)**

- Informative sessions on the topic
- Seminars and trainings on the topic
- Collegial interchange organized by the organization
- Coaching/support offered with the practical implementation
- No support received
- Other

20.) **Would you have liked to have had more support?**

- Yes
- No

21.) **If so, what kind of support would you have wished for?**

22.) **How many days, in total, have you had training/information/workshops on learning facilitation?**

- less than 5 days
- between 5 and 10 days
- between 11 and 20 days
- more than 20 days

Please indicate how much the following statements apply to you:

23.) **I am very convinced of the learning facilitation approach.**

Totally agree	Partly agree	Partly disagree	Totally disagree

24.)**My attitude as a trainer/facilitator has changed a lot**

Totally agree	Partly agree	Partly disagree	Totally disagree

25.)**My knowledge regarding the following topics is high:**

	Totally agree	Partly agree	Partly disagree	Totally disagree
Learning facilitation				
Enabling didactics				
Constructivism				
KOSIG (competence oriented didactics for health and safety at work)				

26.)**Have you begun to implement elements of learning facilitation in your seminars? (if yes, continue with the next question, if not, FILTER to question 30)**

Yes
No

27.)**What are the main changes in your seminars? (multiple response)**

	Totally agree	Partly agree	Partly disagree	Totally disagree
I try out new methods in my seminars (Toolbox)				
I give more space to self-organized learning				
I design my seminars more openly with respect to the processes				
I leave the responsibility for the learning process more with the participants				
I give participants more time for self-reflection				
I take more time for self-reflection				
Other, please specify:				

28.)**Generally , my seminars have changed a lot**

Totally agree	Partly agree	Partly disagree	Totally disagree

29.) **What are your experiences with trying to implement earning facilitation in your seminars?**

Please indicate how much you agree/not agree with the following statements:

	Totally agree	Partly agree	Partly disagree	Totally disagree
It worked well				
It was easy for me to step out of the role of the trainer				
After the basic qualification, I knew what to do differently as a learning facilitator				
Trying out learning facilitation made me feel insecure				
When I feel insecure, I use techniques that make me feel secure again				
The participants work more on topics that are relevant to them				
There was resistance from the participants				
Overall, the participants learned more				
Other experiences:				

30.) **You have not implemented learning facilitation in your seminars. Would you have like to try to implement it? (Filter from question 26)**

- Yes
- No
- I don´t know

31.) **What were your reasons for not implementing learning facilitation (multiple responses)**

- I did not have enough seminars to try something out
- I did not have enough time to prepare the implementation
- There was not enough support from the organization
- The approach did not convince me
- I have been doing a lot of what was taught already in my seminars
- I think the seminar participants don´t like the approach
- My work priorities lie elsewhere
- My personal development interest is not in learning facilitation
- Other:

We are interested in the development of your attitude towards learning facilitation over time. Please estimate your attitude regarding learning facilitation at the following points in time:

32.) Before the first event/seminar dealing with learning facilitation (e.g. when the rollout/adoption of the approach was announced) my attitude was **positive.**

Totally agree	Partly agree	Partly disagree	Totally disagree

Please state why:

33.) After the basic qualification (or your other first trainings) on learning facilitation my attitude was **positive.**

Totally agree	Partly agree	Partly disagree	Totally disagree

Please state why:

34.) After your first trials of implementation (or one months after the training, if there was no implementation) my attitude was **positive.**

Totally agree	Partly agree	Partly disagree	Totally disagree

Please state why:

35.) Today, my attitude towards learning facilitation is positive.

Totally agree	Partly agree	Partly disagree	Totally disagree

Please state why:

D. Challenges

36.) **Which of the following challenges have you encountered while trying to implement learning facilitation? (multiple responses possible)**

- Lack of time for preparation
- Not enough seminars to try out the approach
- Lack of belief in the approach
- Lack of knowledge of what exactly I have to do different as learning facilitator
- Lack of support from superiors
- Resistance from participants
- Others, please specify:
- No challenges encountered

37.) **Have you persisted with learning facilitation (in spite of the challenges)? (If no, filter to question 40)**

- Yes
- No

38.) **If yes: What motivated you to continue?**

- I believe in the approach
- I like challenges
- I like to grow professionally
- It opens new career options to me
- I continued because it is a requirement of the organization/superior
- Other:

39.) **If yes: What are your next steps as a learning facilitator? (multiple responses)**

- I want to develop further as a learning facilitator
- I want to consolidate what I have learned so far

40.) **If no: If you have not persisted with learning facilitation: What were the reasons (multiple responses), filter from question 37**

- I did not have enough seminars to try something out
- I did not have enough time to prepare the implementation
- The approach did not convince me
- Lack of knowledge of what exactly I have to do different as learning facilitator
- There was not enough support from the organization
- I think the seminar participants don´t like the approach
- My work priorities lie elsewhere
- My personal development interest is not in learning facilitation
- Other:

41.) **Please indicate how much you agree with the following statements:**

	Totally agree	Partly agree	Partly disagree	Totally disagree
I proactively implement new methods and techniques of learning facilitation in my seminars				
Preferably, I hold my seminars the way I did them before the implementation of learning facilitation				
Even if learning facilitation is required, I teach the way I always have.				
I constantly try to improve as a learning facilitator (working on my attitude, self-reflect)				

42.) **Do you think every trainer can become a learning facilitator**

- Yes
- No

43.) **Please specify why:**

44.) **According to your view: Is learning facilitation only something for experienced trainers or can trainers with little training experience become learning facilitators?**

- One needs training experience to become a learning facilitator
- One can become a learning facilitator even with little experience as a trainer

Comment (optional):

45.) **What are, in your opinion, the trend topics for training and development in the next five years? Please state up to three topics:**

46.) **Which role will learning facilitation play in the next five years?**

- Its role will increase
- Its role will decrease
- Its role will remain the same
- It will play no role at all

47.) **You have reached the end of the questionnaire. Is there anything else you would like to add?**

Thank you very much!

With some participants of this survey we would like to carry out personal interviews which will last about 30 minutes.

If you would like to be interviewed on your experiences with learning facilitation, please indicate your contact details below. We are interested in everyone: Whether you are happy with learning facilitation or rather critical. All opinions and experiences are welcome.

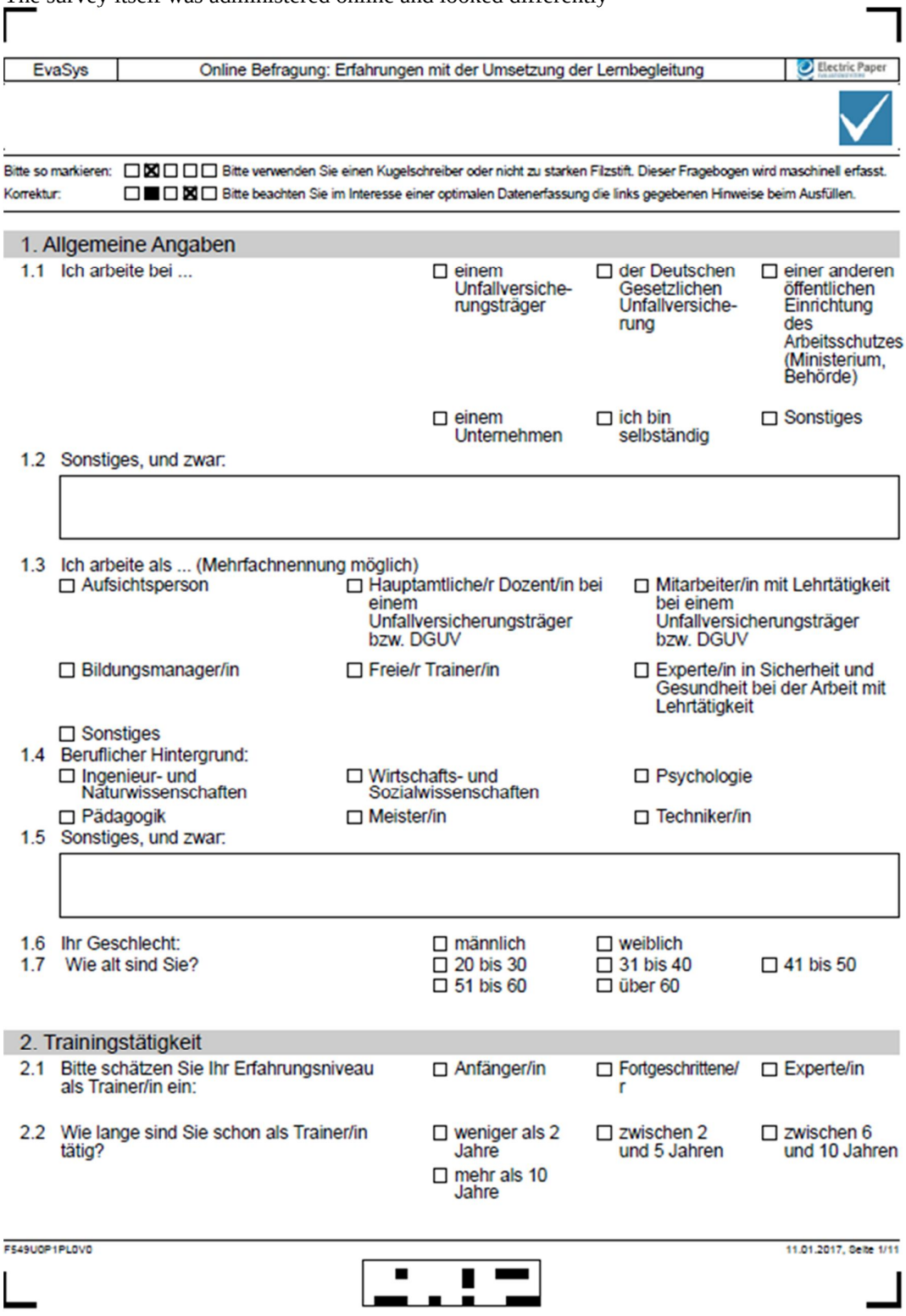
- Surname
- Name
- Phone
- Email

If you give your contact details here, we may contact you later to provide you with more information. Providing your contact information here does not obligate you to take part later. Thank you very much!

**In the online questionnaire, the Likert scale ratings were sometimes presented in the order shown here and sometimes reversely coded in order to avoid a response bias.*

Annex 4: Online Survey German

The survey itself was administered online and looked differently



EvaSys | Online Befragung: Erfahrungen mit der Umsetzung der Lernbegleitung | Electric Paper

Bitte so markieren: ☐☒☐☐☐ Bitte verwenden Sie einen Kugelschreiber oder nicht zu starken Filzstift. Dieser Fragebogen wird maschinell erfasst.
Korrektur: ☐■☐☒☐ Bitte beachten Sie im Interesse einer optimalen Datenerfassung die links gegebenen Hinweise beim Ausfüllen.

1. Allgemeine Angaben

1.1 Ich arbeite bei ...
☐ einem Unfallversicherungsträger
☐ der Deutschen Gesetzlichen Unfallversicherung
☐ einer anderen öffentlichen Einrichtung des Arbeitsschutzes (Ministerium, Behörde)
☐ einem Unternehmen
☐ ich bin selbständig
☐ Sonstiges

1.2 Sonstiges, und zwar:

1.3 Ich arbeite als ... (Mehrfachnennung möglich)
☐ Aufsichtsperson
☐ Hauptamtliche/r Dozent/in bei einem Unfallversicherungsträger bzw. DGUV
☐ Mitarbeiter/in mit Lehrtätigkeit bei einem Unfallversicherungsträger bzw. DGUV
☐ Bildungsmanager/in
☐ Freie/r Trainer/in
☐ Experte/in in Sicherheit und Gesundheit bei der Arbeit mit Lehrtätigkeit
☐ Sonstiges

1.4 Beruflicher Hintergrund:
☐ Ingenieur- und Naturwissenschaften
☐ Wirtschafts- und Sozialwissenschaften
☐ Psychologie
☐ Pädagogik
☐ Meister/in
☐ Techniker/in

1.5 Sonstiges, und zwar:

1.6 Ihr Geschlecht:
☐ männlich
☐ weiblich

1.7 Wie alt sind Sie?
☐ 20 bis 30
☐ 31 bis 40
☐ 41 bis 50
☐ 51 bis 60
☐ über 60

2. Trainingstätigkeit

2.1 Bitte schätzen Sie Ihr Erfahrungsniveau als Trainer/in ein:
☐ Anfänger/in
☐ Fortgeschrittene/r
☐ Experte/in

2.2 Wie lange sind Sie schon als Trainer/in tätig?
☐ weniger als 2 Jahre
☐ zwischen 2 und 5 Jahren
☐ zwischen 6 und 10 Jahren
☐ mehr als 10 Jahre

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2. Trainingstätigkeit [Fortsetzung]

2.3 Meine Tätigkeit als Trainer/in (Seminare, Schulungen) umfasst
☐ weniger als 10 % meiner Arbeitszeit.
☐ zwischen 10 % und 25 % meiner Arbeitszeit.
☐ zwischen 26 % und 50 % meiner Arbeitszeit.
☐ mehr als 50 % meiner Arbeitszeit.

2.4 Haben Sie eine formelle Trainerqualifikation? ☐ Ja ☐ Nein

2.5 Wenn ja, welche?
☐ Train-the-Trainerzertifikat der DGUV ☐ Sonstige

2.6 Sonstige, und zwar:

2.7 Haben Sie eine Coachingausbildung abgeschlossen? ☐ Ja ☐ Nein

Aus welchem Grund geben Sie Seminare?

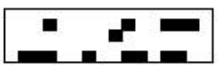
	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
2.8 Ich vermittle gerne Fachwissen.	☐	☐	☐	☐
2.9 Ich begleite gerne Teilnehmende bei ihren Lernprozessen.	☐	☐	☐	☐
2.10 Ich gebe hauptsächlich Seminare, weil dies zu meinen beruflichen Aufgaben gehört.	☐	☐	☐	☐
2.11 Ich tausche mich gerne mit Teilnehmenden aus.	☐	☐	☐	☐
2.12 Ich entwickle mich gerne selbst weiter.	☐	☐	☐	☐

2.13 Sonstiges, und zwar:

3. Lernbegleitung

3.1 Bitte schätzen Sie Ihr Erfahrungsniveau als Lernbegleiter/in ein: ☐ Anfänger/in ☐ Fortgeschrittene/r ☐ Experte/in

3.2 Wie lange sind Sie schon als Lernbegleiter/in tätig?
☐ Weniger als 12 Monate ☐ Zwischen 1 und 3 Jahren ☐ Mehr als 3 Jahre
☐ Ich bin noch nicht als Lernbegleiter/in tätig gewesen.



3. Lernbegleitung [Fortsetzung]

3.3 Wie haben Sie sich zum/r Lernbegleiter/in fortgebildet? (Mehrfachnennung möglich)

- ☐ die Basisqualifikation zum Lernbegleiter am IAG.
- ☐ Fortbildung bei meiner Unfallkasse/BG.
- ☐ IAG Trainertage zur Ermöglichungsdidaktik 2012.
- ☐ IAG Trainertage zur Ermöglichungsdidaktik 2014.
- ☐ Sonstiges

3.4 Sonstiges (bitte nennen Sie die Dozenten/innen, Institution/Organisation und Länge der Maßnahme):

Was sind für Sie die zentralen Punkte der Lernbegleitung? Bitte nennen Sie bis zu drei Stichpunkte:

3.5 Erster Stichpunkt:

3.6 Zweiter Stichpunkt:

3.7 Dritter Stichpunkt:

Was war Ihre Motivation an der "Basisqualifikation für Lernbegleiter" teilzunehmen?

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
3.8 Interesse am Thema	☐	☐	☐	☐
3.9 Vorgabe des Arbeitgebers	☐	☐	☐	☐
3.10 Austausch mit anderen Teilnehmenden	☐	☐	☐	☐
3.11 Erlangen eines Zertifikats	☐	☐	☐	☐
3.12 Neue Methoden kennen zu lernen	☐	☐	☐	☐

3.13 Sonstiges:

Was motiviert Sie generell, sich als Trainer/in professionell weiter zu entwickeln?

3. Lernbegleitung [Fortsetzung]

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
3.14 Mein Fachwissen zu erweitern	☐	☐	☐	☐
3.15 Methodisch-didaktische Innovationen kennen zu lernen	☐	☐	☐	☐
3.16 Karrierechancen zu eröffnen	☐	☐	☐	☐
3.17 Verpflichtung von Seiten des Arbeitgebers	☐	☐	☐	☐
3.18 Erfahrungsaustausch mit anderen Teilnehmenden	☐	☐	☐	☐

3.19 Sonstiges:

3.20 Wie hat Ihre Organisation Sie auf dem Weg zum/r Lernbegleiter/in unterstützt? (Mehrfachnennung möglich)

☐ Informationsveranstaltung zum Thema
☐ Seminare zum Thema
☐ Kollegialer Austausch wurde organisiert
☐ Beratung/Coaching bei der Umsetzung
☐ Keine Unterstützung erhalten
☐ Sonstiges

3.21 Sonstiges, und zwar:

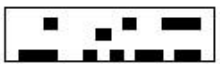
3.22 Hätten Sie sich mehr Unterstützung gewünscht? ☐ Ja ☐ Nein

3.23 Wenn ja, welche

3.24 Wie viele Tage insgesamt haben Sie sich zum Thema Lernbegleitung fortgebildet?
☐ Weniger als 5 Tage
☐ Zwischen 5 und 10 Tagen
☐ Zwischen 11 und 20 Tagen
☐ Mehr als 20 Tage

Im Folgenden bitten wir Sie nun um die Einschätzung folgender Aussagen:

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
3.25 Von der Lernbegleitung bin ich sehr überzeugt.	☐	☐	☐	☐
3.26 Meine Haltung im Seminar als Trainer/in bzw. Lernbegleiter/in hat sich sehr verändert.	☐	☐	☐	☐



3. Lernbegleitung [Fortsetzung]

Mein Wissenstand zu den folgenden Themen ist hoch:

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
3.27 Lernbegleitung	☐	☐	☐	☐
3.28 Ermöglichungsdidaktik	☐	☐	☐	☐
3.29 Konstruktivismus	☐	☐	☐	☐
3.30 KoSiG (KompetenzBildung für Sicherheit und Gesundheitsschutz)	☐	☐	☐	☐

3.31 Haben Sie begonnen, Elemente der Lernbegleitung in Ihren Seminaren umzusetzen? ☐ Ja ☐ Nein

Welche Veränderungen sind in Ihren Seminaren vorgekommen?

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
3.32 Ich probiere neue Methoden in meinen Seminaren aus (z. B. Toolbox).	☐	☐	☐	☐
3.33 Ich gebe mehr Raum für selbstorganisiertes Lernen.	☐	☐	☐	☐
3.34 Ich gestalte meine Seminare offener hinsichtlich der Prozesse.	☐	☐	☐	☐
3.35 Ich lasse die Verantwortung für den Lernerfolg mehr bei den Teilnehmenden.	☐	☐	☐	☐
3.36 Ich gebe den Teilnehmenden mehr Raum für Selbstreflexion.	☐	☐	☐	☐
3.37 Ich nehme mir selbst mehr Zeit für Selbstreflexion.	☐	☐	☐	☐

3.38 Sonstiges:

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
3.39 Meine Seminare haben sich insgesamt gesehen sehr verändert.	☐	☐	☐	☐

3. Lernbegleitung [Fortsetzung]

Was sind Ihre Erfahrungen mit der Umsetzung der Lernbegleitung in Ihren Seminaren?
Bitte geben Sie an, wie sehr folgende Aussagen Ihrer Meinung nach zutreffen.

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
3.40 Es hat gut funktioniert.	☐	☐	☐	☐
3.41 Mir fiel es leicht, die Trainerrolle zu verlassen.	☐	☐	☐	☐
3.42 Nach der Basisqualifikation wusste ich, was ich als Lernbegleiter/in anders machen soll.	☐	☐	☐	☐
3.43 Im Seminar als Lernbegleiter/in tätig zu sein, hat zunächst Unsicherheit in mir ausgelöst.	☐	☐	☐	☐
3.44 Wenn ich mich unsicher fühle, wende ich Vorgehensweisen an, mit denen ich mich sicher fühle.	☐	☐	☐	☐
3.45 Die Teilnehmenden arbeiten mehr an Themen, die für sie relevant sind.	☐	☐	☐	☐
3.46 Es gab Widerstand von den Teilnehmenden.	☐	☐	☐	☐
3.47 Die Teilnehmenden haben insgesamt mehr gelernt.	☐	☐	☐	☐

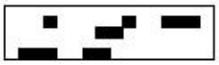
3.48 Sonstige Erfahrungen:

3.49 Sie haben die Lernbegleitung in Ihren Seminaren nicht umgesetzt. Hätten Sie die Umsetzung gerne ausprobiert? ☐ Ja ☐ Nein ☐ Weiß nicht

3.50 Was sind die Gründe dafür, dass Sie die Lernbegleitung bisher nicht umgesetzt haben? (Mehrfachnennung möglich)

- ☐ Ich hatte nicht genügend Seminareinsätze, um die Umsetzung auszuprobieren.
- ☐ Ich hatte nicht genug Zeit, die Umsetzung auszuprobieren.
- ☐ Es gab nicht genug Unterstützung von der Organisation.
- ☐ Der Ansatz überzeugt mich nicht.
- ☐ Ich musste nichts mehr umsetzen, weil ich bereits vorher vieles vom Lernbegleiter - Ansatz in meinen Seminaren integriert hatte.
- ☐ Ich denke, die Teilnehmenden tragen den Ansatz nicht mit mir.
- ☐ Meine Arbeitsschwerpunkte liegen woanders.
- ☐ Mein Entwicklungsinteresse liegt nicht in der Lernbegleitung.
- ☐ Sonstiges

3.51 Sonstiges, und zwar:



3. Lernbegleitung [Fortsetzung]

Uns interessiert Ihre Einstellung zur Lernbegleitung zu unterschiedlichen Zeitpunkten.
Bitte schätzen Sie **Ihre Einstellung zur Lernbegleitung** zu folgenden Zeitpunkten ein:

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
3.52 **Vor dem Besuch** der ersten Veranstaltung oder Schulung zum Thema stand ich der Lernbegleitung **positiv** gegenüber.	☐	☐	☐	☐

3.53 Bitte begründen Sie:

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
3.54 **Nach der Basisqualifikation zum Lernbegleiter** stand ich dem Thema **positiv** gegenüber.	☐	☐	☐	☐

3.55 Bitte begründen Sie:

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
3.56 **Nach der ersten Umsetzung in der Praxis** (bzw. falls eine Umsetzung nicht möglich war, zwei Monate nach der Schulung) stand ich der Lernbegleitung **positiv** gegenüber.	☐	☐	☐	☐

3.57 Bitte begründen Sie:

3. Lernbegleitung [Fortsetzung]

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
3.58 Heute ist meine Einstellung zur Lernbegleitung **positiv**.	☐	☐	☐	☐

3.59 Bitte begründen Sie:

4. Herausforderungen

4.1 Welche Herausforderungen bei der Umsetzung der Lernbegleitung sind bei Ihnen aufgetreten? (Mehrfachnennung möglich)

- ☐ Zeitmangel für die Vorbereitung
- ☐ Zu wenig Seminareinsätze zum Ausprobieren
- ☐ Nicht vom Ansatz überzeugt
- ☐ Fehlendes Wissen, was genau ich als Lernbegleiter/in anders machen soll
- ☐ Fehlende Unterstützung der Organisation
- ☐ Widerstand von den Teilnehmenden
- ☐ Keine Herausforderungen angetroffen
- ☐ Andere Herausforderungen

4.2 Andere Herausforderungen, nämlich:

4.3 Haben Sie die Lernbegleitung (ggf. trotz der Herausforderungen) weiter verfolgt? ☐ Ja ☐ Nein

4.4 Was hat Sie motiviert, weiterzumachen? (Mehrfachnennung möglich)

- ☐ Überzeugt vom Ansatz
- ☐ Spaß an der Herausforderung
- ☐ Der Wunsch, professionell zu wachsen
- ☐ Eröffnung neuer Karrieremöglichkeiten
- ☐ Vorgabe der Organisation
- ☐ Sonstiges

4.5 Sonstiges, und zwar:

Was sind Ihre nächsten Schritte als Lernbegleiter/in? (Mehrfachnennung möglich)

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
4.6 Ich möchte mich noch stärker in Richtung Lernbegleiter/in entwickeln.	☐	☐	☐	☐
4.7 Ich möchte als Lernbegleiter/in zunächst das verfestigen, was ich gelernt habe.	☐	☐	☐	☐

4. Herausforderungen [Fortsetzung]

4.8 Sonstiges, und zwar:

4.9 Sie haben die Lernbegleitung nicht weiter verfolgt. Hätten Sie dies gerne getan? ☐ Ja ☐ Nein ☐ Weiß nicht

4.10 Was waren die Gründe, weshalb Sie die Lernbegleitung nicht weiter umgesetzt haben? (Mehrfachnennung möglich)

- ☐ Zeitmangel für die Vorbereitung
- ☐ Zu wenig Seminareinsätze zum Ausprobieren
- ☐ Der Ansatz überzeugt mich nicht
- ☐ Fehlendes Wissen, was genau ich als Lernbegleiter/in anders machen soll
- ☐ Fehlende Unterstützung der Organisation
- ☐ Widerstand von den Teilnehmenden
- ☐ Meine Arbeitsschwerpunkte liegen woanders
- ☐ Mein Entwicklungsinteresse liegt nicht in der Lernbegleitung
- ☐ Meine Arbeitsschwerpunkte liegen woanders
- ☐ Sonstiges

4.11 Sonstiges, und zwar:

Bitte kreuzen Sie an, wie sehr folgende Aussagen auf Sie zutreffen.

	trifft zu	trifft eher zu	trifft eher nicht zu	trifft nicht zu
4.12 Ich setze proaktiv neue Methoden und Techniken der Lernbegleitung in meinen Seminaren ein.	☐	☐	☐	☐
4.13 Ich halte Seminare bevorzugt so, wie ich sie vor der Einführung Lernbegleitung gehalten habe.	☐	☐	☐	☐
4.14 Selbst wenn Lernbegleitung verlangt wird, lehre ich so, wie ich das von jeher gemacht habe.	☐	☐	☐	☐
4.15 Ich versuche ständig, mich als Lernbegleiter noch zu verbessern (z. B. durch Arbeit an meiner Haltung, Selbstreflexion…).	☐	☐	☐	☐

4.16 Glauben Sie, dass jede/r Dozent/in Lernbegleiter/in werden kann? ☐ Ja ☐ Nein

4.17 Bitte begründen Sie Ihre Antwort kurz:

4.18 Ist Lernbegleitung nur etwas für erfahrene Trainer/in oder können auch Menschen mit geringer Trainingserfahrung Lernbegleiter/in werden? (Mehrfachnennung möglich)

- ☐ Man braucht Trainingserfahrung, um Lernbegleiter/in zu werden
- ☐ Man kann auch mit wenig Trainingserfahrung Lernbegleiter/in werden

4. Herausforderungen [Fortsetzung]

Welches sind Ihrer Meinung nach die Trendthemen für Training und Weiterbildung in den nächsten fünf Jahren? Bitte nennen Sie bis zu drei Trendthemen:

4.19 Erstes Trendthema:

4.20 Zweites Trendthema:

4.21 Drittes Trendthema:

4.22 Welche Rolle wird Ihrer Meinung nach die Lernbegleitung in den nächsten fünf Jahren in Training und Weiterbildung spielen?

- ☐ Bedeutung wird zunehmen
- ☐ Bedeutung wird abnehmen
- ☐ Bedeutung wird so bleiben
- ☐ Keine Bedeutung mehr

4.23 Wollen Sie uns noch etwas mitteilen?

5. Teilnahme am persönlichen Interview

Im Nachgang zur Befragung wollen wir mit einigen Teilnehmenden persönliche Interviews von etwa 30 Minuten Dauer durchführen.

Uns interessieren sowohl die Meinungen derjenigen, die vom Ansatz überzeugt sind als auch derjenigen, die der Lernbegleitung kritisch gegenüber stehen.

Wenn Sie bereit sind gegebenenfalls zu Ihren Erfahrungen mit der Lernbegleitung interviewt zu werden, geben Sie bitte hier Ihre Kontaktdaten an:

5.1 Nachname, Vorname:

5.2 Telefon:

5. Teilnahme am persönlichen Interview [Fortsetzung]

5.3 E-Mail:

Vielen Dank!

*In the online questionnaire, the Likert scale ratings were sometimes presented in the order shown here and sometimes reversely coded in order to avoid a response bias.

INFORMATION SHEET FOR PARTICIPANTS
(The Information will be presented in German. For application purposes, it has been translated into English)

REC Reference Number: LRS- 15/16 - 3124

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

The Professional Development of Trainers becoming Learning Facilitators

I would like to invite you to participate in this postgraduate research project. You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, it is important for you to understand why the research is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask me if there is anything that is not clear or if you would like more information.

Aims of the research
The German Social Accident Insurance organisation has been restructuring its training courses to a constructivist approach. One implication of this is that the role of the trainer changes: Less training and more learning facilitation will be required in the future.

The aim of this study is to learn about trainers' motivations towards learning facilitation. It also looks at the challenges and difficulties that have been encountered by trainers when trying to implement aspects of learning facilitation in their trainings and ways to overcome them.

The study consists of two parts: The first part is an online –survey, dealing with the experiences of trainers becoming learning facilitators. The second part consists of interviews with people who are rather critical of learning facilitation. The interviews will complement the data obtained with the survey.

Why have you been invited to take part?
You have been invited to take part because you indicated that you felt rather critical with respect to learning facilitation.

What will happen if you agree to take part in the study?
If you decide to take part in the study, an interview time that is convenient for both of us will be agreed upon. Depending on your preferences, the interview can be carried out on the premises of the Institute for Work and Health in a quiet room or via telephone or Skype. The interview itself will take about one hour. If you wish, you may receive the outline of the interview questions before the interview itself.

Subject to your permission, the interview itself will be audio recorded. I will transcribe it myself. You will receive an Email from me once the interview has been transcribed. You can then decide if you would like to receive a copy of the interview. If you wish, you will have the chance to check if the transcript reflects what you wanted to convey and, if you would like to, you can take out passages from the interview or add things to it that you find important before sending the interview back to me. However, if you would prefer not to receive the interview and/or receive it but not revise it, that would be fine. To safeguard your privacy and anonymity, all references to you as a person will be altered, as well as places or institutions or other cues that may allow an identification of you as the interviewee. Data will be stored electronically on a password protected laptop and will be separated from your name in a password protected file.

Access to the transcribed data will be limited to me and my two supervisors at King's College, London.

What are the possible risks of taking part?
As you know me personally and we are likely to keep meet in professional contexts, you might want to think beforehand about topics you do not want to address or issues you do not want to disclose in the interview.

What are possible benefits of taking part?
The results of the study can clarify the professional development of trainers towards learning facilitators. Knowledge about the factors that foster or hinder this development may be helpful when designing training measures for trainers in this area.

Will my taking part be kept confidential?

Yes.

What will happen to the results of the study?
The results of the research will be published in the form of a scientific journal article and/or in form of a study report. They may also be presented at scientific conferences.

Can I still withdraw from the study?
It is up to you to decide whether to take part or not. If you decide to take part you are still free to withdraw from the study at any time and without giving a reason. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. You can also withdraw your data from the study until the 31st of August 2017.

Who should I contact for further information?
If you have any questions or require more information about this study, please contact me using the following contact details:

Katrin Boege
King´s College London
Phone: +49 351 4571124
Email: katrin.boege@kcl.ac.uk

What if I have further questions or something goes wrong?
If you have further questions concerning the study, you can contact my supervisor at King´s College, London:
Dr. Jill Hohenstein
Programme Director for Education/Doctorate in Professional Studies
Senior Lecturer in Psychology of Education
Department of Education and Professional Studies
Faculty of Social Science & Public Policy
King´s College London, UK
Tel: +44 (0)20 7848 3100
Fax: +44 (0)20 7848 3182
Email: jill.hohenstein@kcl.ac.uk

Thank you for reading this information sheet and for considering taking part in this research.

CONSENT FORM FOR PARTICIPANTS IN RESEARCH STUDIES

Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research.

Title of Study: ***Professional Development of Trainers becoming Learning Facilitators***

King's College Research Ethics Committee Ref: LRS-15/16 – 3124

Thank you for considering taking part in this research. The person organising the research must explain the project to you before you agree to take part. If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.

	Please tick or initial
I confirm that I understand that by ticking/initialing each box I am consenting to this element of the study. I understand that it will be assumed that unticked/initialed boxes mean that I DO NOT consent to that part of the study. I understand that by not giving consent for any one element I may be deemed ineligible for the study.	☐
1. *I confirm that I have read and understood the information sheet dated May 30 2017, version 1 for the above study. I have had the opportunity to consider the information and asked questions which have been answered satisfactorily.	☐
2. *I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. Furthermore, I understand that I will be able to withdraw my data up to 31st of August 2017	☐
3. *I consent to the processing of my personal information for the purposes explained to me. I understand that such information will be handled in accordance with the terms of the UK Data Protection Act 1998.	☐
4. *I understand that my information may be subject to review by responsible individuals from the College for monitoring and audit purposes.	☐
5. I understand that confidentiality and anonymity will be maintained and it will not be possible to identify me in any publications	☐
6. I agree that the research team may use my data for future research and understand that any such use of identifiable data would be reviewed and approved by a research ethics committee. (In such cases, as with this project, data would/would not be identifiable in any report).	☐
7. I understand that the information I have submitted will be published as a report and I wish to receive a copy of it.	☐
8. I consent to my interview being audio/video recorded.	☐

_____	_____	_____
Name of Participant	**Date**	**Signature**
_____	_____	_____
Name of Researcher	**Date**	**Signature**

Annex 6: Interview-Information Sheet & Consent Form German

INFORMATIONSBLATT FÜR TEILNEHMENDE

REC Referenznummer: LRS-15/16 – 3124

Sie erhalten eine Kopie dieses Informationsblatts

Die Entwicklung von Trainern zu Lernbegleitern

Ich möchte Sie einladen, an diesem Forschungsprojekt teil zu nehmen. Sie sollten nur teilnehmen, wenn Sie das möchten. Falls Sie nicht teilnehmen, wird dies keine negativen Auswirkungen für Sie haben. Bevor Sie entscheiden, ob Sie teilnehmen, sollten Sie erfahren, worum es in diesem Forschungsprojekt geht und was Ihre Teilnahme bedeutet. Bitte nehmen Sie sich die Zeit, die folgenden Informationen sorgfältig zu lesen uns diese mit mir oder anderen zu besprechen. Bitte fragen Sie mich, wenn etwas unklar ist oder Sie weitere Informationen benötigen.

Ziel des Forschungsprojekts

Die Deutsche Gesetzliche Unfallversicherung strukturiert ihre Ausbildungskurse um in Richtung Konstruktivismus um. Eine Auswirkung davon ist, dass sich die Rolle des Trainers verändert: Weniger Training und mehr Lernbegleitung wird in der Zukunft gefordert sein.

Das Ziel des Projektes ist es, zu erfahren, was Trainer und Dozenten motiviert, sich Richtung Lernbegleitung zu entwickeln. Herausforderungen und Schwierigkeiten auf dem Weg dorthin und bei der Umsetzung sollen untersucht werden.

Die Studie hat zwei Teile: Der erste Teil ist eine Online-Umfrage, in der die Erfahrungen von Trainern auf Ihrem Weg zum Lernbegleiter erhoben werden. Der zweite (dieser) Teil besteht aus Interviews mit Personen, die der Lernbegleitung aus unterschiedlichen Gründen eher kritisch gegenüberstehen. Die Interviews ergänzen die Daten, die durch die Umfrage erhalten wurden.

Wieso sind Sie angesprochen worden?

Sie sind angesprochen worden, da Sie der Lernbegleitung eher kritisch gegenüberstehen und mir vorab signalisiert haben, dass Sie prinzipiell an einer Teilnahme interessiert seien.

Was passiert, wenn Sie sich entscheiden, an der Studie teilzunehmen?

Wenn Sie sich entscheiden, an der Studie teilzunehmen, werden wir einen Termin für das Interview vereinbaren, der uns beiden gut passt. Das Interview kann – Ihrem Wunsch entsprechend – in einem ruhigen Seminarraum innerhalb des Instituts für Arbeit und Gesundheit oder per Telefon durchgeführt werden. Das Interview selbst wird ungefähr eine Stunde dauern. Falls Sie es wünschen, können Sie vorher eine Zusammenstellung der Interviewfragen bekommen. Ihr Einverständnis vorausgesetzt, wird das Interview mit einem Aufnahmegerät aufgenommen. Das Interview wird dann transkribiert und Sie bekommen eine E-Mail von mir, wenn das Interview transkribiert ist. Dann können Sie entscheiden, ob Sie eine Kopie des Interviews erhalten möchten. Wenn Sie möchten, können Sie diese Möglichkeit nutzen um zu prüfen, ob das Transkript das wiedergibt, was Sie sagen wollten. Gegebenenfalls können Sie, wenn Sie möchten, Passagen aus dem Interview herausnehmen bzw. Dinge hinzufügen, die Sie wichtig finden, bevor Sie mir das Interview zurücksenden. Wenn Sie das Interview nicht erhalten wollen, ist das kein Problem.

Um Ihre Anonymität und Ihre Privatsphäre zu wahren, werden alle Stellen, die Sie als Person identifizieren könnten, anonymisiert, ebenso alle Hinweise auf Orte oder Gremien, die Sie identifizierbar machen würden. Die Daten werden elektronisch gespeichert auf einem Password geschützten Computer in einer Password geschützten Datei. Diese wird ohne Ihren Namen gespeichert. Der Zugang zu den Daten wird auf mich und meine beiden Supervisoren am King's College, London begrenzt.

Was sind die Risiken bei einer Teilnahme

Da wir uns persönlich kennen und es wahrscheinlich ist, dass wir uns im professionellem Kontext wiedersehen, möchten Sie vielleicht darüber nachdenken, was Sie sagen möchte und welche Themen Sie gegebenenfalls im Interview nicht ansprechen wollen.

Was ist der Nutzen Ihrer Teilnahme?

Die Ergebnisse der Studie können dazu beitragen, die Entwicklung von Trainern zu Lernbegleitern zu beleuchten. Faktoren, die zu dieser Entwicklung beitragen oder sie behindern können es erleichtern, sinnvolle Fortbildungsmaßnahmen für Trainer in diesem Bereich zu entwickeln.

Ist Ihre Teilnahme vertraulich?

Ja.

Was passiert mit den Ergebnissen?

Die Ergebnisse werden in einem wissenschaftlichen Fachartikel und/oder in einem Report veröffentlicht. Sie können auch bei wissenschaftlichen Konferenzen vorgestellt werden.

Kann ich noch von der Studie zurücktreten?

Sie können ganz frei entscheiden, ob Sie an der Studie teilnehmen oder nicht. Wenn Sie sich entschieden haben, teil zu nehmen, können Sie auch während des Interviews wieder vom Interview zurücktreten oder im Nachgang des Interviews der Verwendung Ihrer Daten widersprechen.

Falls Sie sich dafür entscheiden, teil zu nehmen, bekommen Sie dieses Informationsblatt und eine Einverständniserklärung zum Unterschreiben.
Einmal erhoben, können Sie der Nutzung Ihrer Interviewdaten nach dem Interview noch bis zum 31. August 2017 widersprechen.

Wen können Sie bei weiterem Informationsbedarf kontaktieren?
Wenn Sie weitere Fragen haben, können Sie mich gerne kontaktieren:

Katrin Boege
King´s College London
Telefon: +49 351 4571124
Email: katrin.boege@kcl.ac.uk

Was ist, wenn Sie weitere Fragen haben oder etwas schiefläuft?
Wenn Sie weitere Fragen haben, können Sie meine Supervisorin am King´s College, London kontaktieren:
Dr. Jill Hohenstein
Programme Director for Education/Doctorate in Professional Studies
Senior Lecturer in Psychology of Education
Department of Education and Professional Studies
Faculty of Social Science & Public Policy

King´s College London, UK
Tel: +44 (0)20 7848 3100
Fax: +44 (0)20 7848 3182
Email: jill.hohenstein@kcl.ac.uk

Danke, dass Sie dieses Informationsblatt gelesen haben und vielen Dank dafür, dass Sie es in Erwägung ziehen, an der Forschungsstudie teilzunehmen.

EINVERSTÄNDNISERKLÄRUNG FÜR TEILNEHMER VON FORSCHUNGSPROJEKTEN

Bitte vervollständigen Sie diese Einverständniserklärung, nachdem Sie das Informationsblatt gelesen und/oder mündlich über die Studie aufgeklärt wurden.

Titel der Studie: Die professionelle Entwicklung von Trainern zu Lernbegleitern

King's College Research Ethics Committee Ref: KCL/12/13- 208

Vielen Dank, dass Sie erwägen, an dieser Studie teilzunehmen. Die Person, die die Forschung durchführt, muss Ihnen das Projekt umfassend erläutern, bevor Sie der Teilnahme zustimmen. Falls Sie irgendwelche Fragen bezüglich des Informationsblattes oder der Ihnen bereits gegebenen Informationen haben, bitten Sie die Studienverantwortliche um Auskunft, bevor Sie sich entscheiden, endgültig teilzunehmen. Sie erhalten eine Kopie dieser Einverständniserklärung, auf die Sie sich jederzeit beziehen können.

Ich bestätige, dass ich mit dem Ausfüllen jedes Kästchens dem in diesem genannten Punkt der Studie zustimme. Mir ist klar, dass nicht ausgefüllte Kästchen bedeuten, dass ich dem genannten Punkt NICHT zustimme. Mir ist ebenfalls bewusst, dass ich, wenn ich bestimmte Punkte nicht ankreuze, ich gegeben falls nicht mehr an der Studie teilnehmen kann.	Bitte an-kreuzen
1. *Ich bestätige, dass ich das Informationsblatt für Teilnehmende vom 30. Mai 2017, Version 2 für die oben genannte Studie gelesen und verstanden habe. Ich hatte ausreichend Gelegenheit, die Informationen zu verarbeiten und Fragen zu stellen. Diese wurden zu meiner Zufriedenheit beantwortet.	☐
2. Mir ist klar, dass meine Teilnahme freiwillig ist und dass ich mich jederzeit ohne Angabe von Gründen aus dem Projekt zurückziehen kann. Außerdem habe ich die Möglichkeit, der Nutzung meiner Daten bis zum 31. August 2017 zu widersprechen	☐
3. Ich stimme der Nutzung meiner persönlichen Daten für die Zwecke zu, die mir dargelegt wurden. Ich gehe davon aus, dass diese Daten entsprechend den Bestimmungen des UK Data Protection Act 1998 behandelt werden.	☐
4. Ich habe verstanden, dass meinen Daten unter Umständen von Verantwortlichen der Universität im Rahmen eines Monitoring oder Audits überprüft werden	☐
5. Ich habe verstanden, dass Vertraulichkeit und Anonymität gewahrt werden, und dass es nicht möglich sein wird, meine Identität in irgendwelchen Publikationen festzustellen.	☐
6. Ich bin damit einverstanden, dass das Studienteam meine Interviewdaten auch im Rahmen zukünftiger Forschungen nutzen darf unter der Bedingung, dass eine solche Nutzung der Prüfung und Zustimmung eines Ethik Komitees für Forschung unterliegen wird. (In solchen Fällen werden, wie beim vorliegenden Projekt auch, die Daten in keiner Veröffentlichung identifizierbar sein).	☐
7. Ich habe verstanden, dass die von mir gegebenen Informationen im Rahmen eines Berichts veröffentlicht werden und ich hätte gerne eine Kopie des Reports.	☐
8. Ich stimme zu, dass mein Interview auf Tonträger bzw. Video aufgenommen wird.	☐

Name Studienteilnehmer……..Unterschrift .....Datum……

Name Studienleiter(in)……..Unterschrift .....Datum……

Annex 7: Construction of the interview guide

The following table shows the literature on teachers' motivation, teacher professional development, organizational change and resistance to change inspired the interview questions.

Interview Questions	Literature
1. Motivation for giving trainings	
How long have you been working as a trainer/learning facilitator? *Which topics do you teach?* *How much time of your total working time do you teach in seminars?*	The rationale behind these questions was to start the interview with relatively easy questions, This is a recommendation from the literature to start semi-structured interviews with questions that are easy to answer and touch less sensitive issues and then move on to more delicate topics (McIntosh & Morse, 2015; Flick, 2009) Questions posed to get the more demographic information (such as years of experience, topics taught, time spent teaching) in order to contextualize the data from the interview (Flick, 2009).
Why do you give seminars? *What are your strengths when giving seminars?* *What is important to you in your seminars* *What motivates you to give seminars?* *Compared to your other professional task, how much do you like/dislike giving seminars?* *What do you like about it?* *What don´t you like about giving seminars?*	Question asked to explore the interviewees' motivation and personal satisfaction from giving seminars, especially about issues they like/do not like about giving seminars Boege (2015) found that very motivated trainers who implemented learning facilitation out of their own motivation were very motivated by 'their own professional development' and by 'developing others'. These questions were posed in order to explore what motivated the trainers who were critical of learning facilitation to give seminars, what they liked about it and what they did not like about it.
Do you feel the need for professional development as a trainer? *What motivates you to update yourself/professionally develop as a trainer?*	Boege (2015) found that trainers who took up learning facilitation out of their own motivation were very interested in their own development. These two questions were asked in order to explore the motivations for professional development of the critical trainers There is a correspondence between teachers´ beliefs and continuing professional development. Student-centred teachers prefer student centred professional development activities (de Vries, Van De Grift, & Jansen, 2013). These questions are asked here to explore whether this is true for the critical trainers interviewed in this study. Interest in professional development is based on different types of motivation in teachers, such as career development, socialization with colleagues or learning goals oriented development. (Rzejak, Künsting, Lipowsky, Fischer, Dezhgahi & Reichardt, 2014).
2. Attitude towards Learning facilitation	
What do you think about enabling didactics? *How would you describe your attitude to enabling didactics?*	Many studies confirm that the more in line a suggested educational innovation is with the educators' own beliefs about learning and teaching, the more likely they are to accept it (Orafi & Borg, 2009; Zhu, Valcke, & Schellens, 2010).

On a scale between 0 – 3, how would you rate your attitude towards enabling didactics? (0 being the lowest, 3 the highest rating)	Tillema, H. H. (2000). Belief change towards self-directed learning in student teachers: immersion in practice or reflection on action. Tondeur, J., Hermans, R., van Braak, J., & Valcke, M. (2008). Exploring the link between teachers' educational belief profiles and different types of computer use in the classroom. The 'uptake of educational innovation is limited if it is not in line with teachers' beliefs about teaching' (Orafi & Borg, 2009, p. 243).
What does annoy you most? *What convinces you?* *What does not convince you?*	People resisting a change usually have legitimate reasons to do so (Nord & Jermier, 1994; Dent & Goldberg, 1999; Piderit, 2000; Oreg, 2006). Question exploring the 'legitimate reasons'. i. e. the interviewees' reasons for being against/not being convinced by learning facilitation. Probing concerning about aspects that perhaps do convince them
How could your attitude concerning enabling didactics get even worse? *How could your attitude become more positive?*	Questions taken from systemic theory (Verschlimmerungsfragen - Patrzek & Scholer, 2015). Posed in order to clarify the main objections concerning learning facilitation. By describing how their attitude would worsen or get better, what the trainers do not like about learning facilitation becomes clearer (Oreg, Vakola, & Armenakis, 2011).)
What is enabling didactics for you?	Conceptions of an educational innovation in the Netherlands involving a change from teacher to coach was understood in very different ways by the teachers involved (Ketelaar, Beijaard, Boshuizen, & Den Brok, 2012a, Ketelaar, Den Brok, Beijaard, & Boshuizen, 2012b. Question aimed at exploring the interviewees' personal understanding of enabling didactics/learning facilitation.
3. Own training in learning facilitation	.
Have you participated in trainings dealing with enabling didactics?	Demographic question to elucidate if further questions about the basic training, i.e. the main training measure related to the educational innovation, could be asked. If not, questions about the basic training were left out.
If so, why did you participate in these trainings? *Had you otherwise not participated?*	According to some research literature, the kind of motivation which inspires participation in trainings on educational innovation can predict implementation. Autonomous motivation predicted implementation whereas controlled motivation did no (Gorozidis & Papaioannou, 2014). Question aimed at identifying the voluntary/non-voluntary nature of the participation in the training and the personal reasons associated with this decision.
How did you find the training?	Recommendation in the literature to focus on the same kind of teachers' professional development and not mix different measures (Desimone, 2009). This is why the focus in my study was primarily on the basic training for learning facilitators rather than on a mixture of training measures.
What was your most important learning from the basic training?	The question was posed in order to explore what the interviewees´ learned or deduced from the basic training.

After the training, how motivated were you to implement aspects of learning facilitation in your seminars	The rationale behind the two questions are findings by Ball (1990), McDiarmid (1992) and Rinties (2008) who report that the intention to alter teachers' teaching orientations with training measures had only limited success. Also, in educational change processes which comprised the presentation of a new teaching approach, teachers focussed predominantly on information that confirmed their actual orientation (Chinn & Brewer, 1993; Tillema, 2000). Pedagogical training for university teachers should take at least a year – shorter courses tend to make teachers more insecure as teachers (Postareff, Lindblom-Ylänne, & Nevgi, 2007). If the basic training is the organizational measure to promote the educational change, then, ideally, having gone to the basic training should motivate trainers to implement learning facilitation in their seminars. Question explores the relationship between the measure and its intended consequences and the interviewees´ motivation to implement.
4. Implementation	
On a scale between 0 and 3 – how much do you implement enabling didactics in your seminars? *How much, if at all, have your seminars changed? (0-3)* *Some people say that after the implementation of learning facilitation, they hold their seminars in the same way as before. How strongly does that apply to you?*	Implementation' is a useful indicator of the uptake of a new mathematics curriculum (Romberg, 2017). Implementation is suggested a an indicator to measure adoption of change (Gilman, 1991)
What is good about the 'old ways' of giving seminars? *What is for you the biggest nonsense concerning learning facilitation?* *What is your approach of giving seminars?*	Questions posed to explore the interviewees' arguments in favour (or against) more traditional forms of teaching (Gow & Kember, 1993) as well in favour (or against) learning facilitation. The provocative phrasing '*what is for you the biggest nonsense concerning learning facilitation*' was used on purpose, to signal to the interviewees – who were recruited on the basis of being critical of learning facilitation –that it is ok to express any objections they have concerning the approach openly. (*although both questions were posed with a directionality, i.e. asking for positive aspects of the old way and negative aspects of the constructivist approach, both questions elicited negative as well as positive answers. This question was posed to identify the interviewees' teaching orientation. Teachers' teaching orientations have been classically divided into teacher-centred and student-centred approaches (Entwistle, 2009; Meirink, Meijer, Verloop, & Bergen, 2009; Samuelowicz & Bain, 2001; Van Driel, Bulte, & Verloop, 2007). The teacher plays a central role in delivering that subject matter content, the individual needs of the students are not addressed. Rather the whole course is treated as 'one collective student' (de Vries &van den Grift, 2013, p. 81).

How do you think your seminar participants learn best? *How do you think that learning works well?* *How have you learned best?*	Teaching orientations are closely related to views about the nature of learners and learning. Teacher-centred teachers have low confidence in students' knowledge and abilities, whereas student-centred teachers have relatively high confidence (Van Driel and Verloop, 2002) Teaching orientations are related to deeply held beliefs about the nature of learning and learners (Van Driel & Verloop, 2002). Therefore, these orientations are generally stable not subject to rapid change
How do you personally benefit from the implementation of learning facilitation? *What does it 'cost' you to rearrange/redesign your seminars?*	If change recipients' perceived risks/costs outweigh benefits, change recipients will resist change. Managers should highlight the personal benefits change has for the employees, beyond its importance for the organization ((Oreg, Vakola, & Armenakis, 2011; Oreg, 2006, Nord & Jermier, 1994). Question posed to explore the associated implementation costs of the interviewees.
How would you describe your attitude towards the management that decided to implement learning facilitation? *Is there something that you would like to say to management?*	Trust in management was found to be an important variable for the acceptance of a change process (Oreg, Vakola, & Armenakis, 2011, Piderit, 2000). Factor that yielded a strong effect size with reactions to change is the degree to which people trust management (Oreg, 2006) Question included in the interview to explore if and how the trust in management played a role in the implementation/non-implementation of learning facilitation in the interviewees.

Annex 8: Guide of the semi-structured interview with critical trainers

Guide of the semi-structured interview with critical trainers/facilitators
(German original with the English translation)

5. Trainingsmotivation (Motivation for giving trainings)

Wie lange sind Sie schon als Dozent/LB tätig?
How long have you been working as a trainer/learning facilitator

Zu welchen Themen geben Sie Seminare?
Which topics do you teach?

Aus welchem Grund geben Sie vornehmlich Seminare?
Why do you give seminars?

Was motiviert Sie, Seminare zu geben?
What motivates you to give seminars?

Wie viel Prozent Ihrer Arbeitstätigkeit machen Seminare aus?
How much time of your total working time do you teach in seminars?

Gemessen an Ihren anderen Aufgaben: Wie gern/ungern geben Sie Seminare? *Compared to your other professional task, how much do you like/dislike giving seminars?*

Was gefällt Ihnen daran?
What do you like about it?

Was sind Ihre Stärken im Seminar?
What are your strengths when giving seminars?

Was ist Ihnen wichtig in Ihren Seminaren?
What is important to you in your seminars?

Was gefällt Ihnen nicht daran, Seminare zu geben?
What don´t you like about giving seminars?

Haben Sie Bedarf, sich als Trainer noch weiter zu bilden?
Do you feel the need for professional development as a trainer?

Was motiviert Sie, sich als Trainer weiterzubilden?
What motivates you to update yourself/professionally develop as a trainer?

6. Einstellung zur Lernbegleitung (Attitude towards Learning facilitation)

Was halten Sie von der Ermöglichungsdidaktik?
What do you think about enabling didactics?

Wie würden Sie Ihre Einstellung zur Ermöglichungsdidaktik beschreiben?
How would you describe your attitude to enabling didactics?

Auf einer Skala von 0 – 3, wie ist deine Einstellung zur Ermöglichungsdidaktik?
On a scale between 0 – 3, how would you rate your attitude towards enabling didactics? (0 being the lowest, 3 the highest rating)

Was nervt Sie am meisten?
What does annoy you most?

Was überzeugt Sie?
What convinces you?

Was überzeugt Sie nicht?
What does not convince you?

Wie könnte sich Ihre Einstellung noch verschlimmern?
How could your attitude concerning enabling didactics get even worse?

Wie könnte sich Ihre Einstellung zum Positiven verändern?
How could your attitude become more positive?

Was ist für Sie Ermöglichungsdidaktik?
What is enabling didactics for you?

7. Eigene Weiterbildungen zur Lernbegleitung (Own training in learning facilitation)

Haben Sie an Schulungen/Trainings zur Ermöglichungsdidaktik teilgenommen?
Have you participated in trainings dealing on enabling didactics?

Weshalb haben Sie an den Trainings teilgenommen?
If so, why did you participate in these trainings?

Hätten Sie sonst nicht teilgenommen?
Had you otherwise not participated?

Wie fanden Sie die Basisqualifikation?
How did you find the training?

Was war Ihre wichtigste Erkenntnis aus der Schulung?
What was your most important learning from the training?

Wie stark waren Sie motiviert, nach der Basisqualifikation die Lernbegleitung umzusetzen?
After the training, how motivated were you to implement aspects of learning facilitation in your seminars?

8. Umsetzung (Implementation)

Auf einer Skala von 0 – 3: Wie stark, würden Sie sagen, setzen Sie die Ermöglichungsdidaktik in Ihren Seminaren ein?
On a scale between 0 and 3 – how much do you implement enabling didactics in your seminars?

Wie stark, wenn überhaupt, haben sich Ihre Seminare, verändert (0 – 3)
How much, if at all, have your seminars changed?

Einige Leute sagen, sie würden auch nach der Einführung der Ermöglichungsdidaktik ihre Seminare weiterhin so halten, wie das vorher gemacht haben.

Wie stark trifft das auf Sie zu?
Some people say that even after the implementation of learning facilitation, they hold their seminars in the same way as before.
How strongly does that apply to you?

Was ist für Sie der größte Quatsch an der Lernbegleitung?
What is for you the biggest nonsense concerning learning facilitation?

Was ist das Gute an der alten Form, Seminare zu geben?
What is good about the „old way“ of giving seminars?

Was ist Ihr Ansatz, Seminare zu geben?
What is your approach of giving seminars?

Wie, denken Sie, lernen Ihre Teilnehmenden am besten?
How do you think your seminar participants learn best?

Wie haben Sie am besten gelernt?
How have you learned best?

Wie denken Sie, das Lernen gut funktioniert?
How do you think that learning works well?

Was haben Sie persönlich von der Einführung der Ermöglichungsdidaktik?
How do you personally benefit from the implementation of learning facilitation?

Was kostet es Sie, die Seminare entsprechend umzustellen?
What does it cost you to rearrange/redesign your seminars in that way?

Wie würden Sie Ihre Einstellung gegenüber dem Management beschreiben, das die Einführung der EMD beschlossen hat?
How would you describe your attitude towards the management that decided to implement learning facilitation?

Gibt es etwas, was Sie dem Gremium gerne sagen würden?
Is there something that you would like to say to them?

Was hätte ich noch fragen sollen, was ich nicht gefragt habe?
Is there anything else I should have asked?

Möchten Sie noch etwas sagen, anfügen?
Would you like to add something?

Vielen Dank für das Interview.
Thank you for the interview.

Annex 9: Results of the statistical analyses in SPSS

Correlation Analysis

Example of the amount correlations that gave rise to the idea of carrying out a PCA

		Do you have a formal trainer qualification	Are you a qualified coach?	I like to impart subject knowledge	I like to facilitate learning processes	Mainly I give seminars because it is part of my professional duties	I like to interchange with seminar participants	I like to develop professionally	Please estimate your expertise as a learning facilitator	How long have you been working as a learning facilitator	Interested in the topic	Requirement of the employer	Exchange with other participants	To receive a certificate	Get to know new training methods	To expand my subject matter knowledge	Get to know didactic innovations	Open career options	Requirement of the employer	Exchange with other participants	How has you organization supported you?	
Do you have a formal trainer qualification	Pearson Correlation	1	,334*	,013	,216	-,134	,034	-,014	-,172	-,075	,242	-,101	,266*	,256	,254	-,053	,070	,089	-,033	,168	-,080	
	Sig. (2-tailed)		,010	,920	,101	,311	,799	,918	,196	,573	,065	,452	,042	,054	,053	,692	,605	,508	,809	,204	,541	
	N	60	58	59	59	59	58	58	58	59	59	58	59	57	59	58	57	58	57	59	60	
Are you a qualified coach?	Pearson Correlation	,334*	1	-,022	,039	-,112	-,113	-,025	-,425**	-,114	,171	-,057	,061	-,040	,168	-,030	,140	,072	,041	,015	,000	
	Sig. (2-tailed)	,010		,866	,769	,398	,399	,852	,001	,390	,196	,669	,646	,765	,204	,823	,299	,592	,763	,911	1,000	
	N	58	60	59	59	59	58	58	58	59	59	58	59	58	59	58	57	58	57	59	60	
I like to impart subject knowledge	Pearson Correlation	,013	-,022	1	,125	,082	,094	,226	-,177	,012	-,018	,041	-,086	-,007	,100	,521**	,060	,327*	,096	,038	,036	
	Sig. (2-tailed)	,920	,866		,340	,531	,475	,082	,181	,930	,889	,754	,513	,956	,449	,000	,657	,011	,468	,772	,783	
	N	59	59	61	60	61	60	60	59	60	60	60	60	59	60	60	58	60	59	60	61	
I like to facilitate learning processes	Pearson Correlation	,216	,039	,125	1	-,198	,427**	,121	-,329*	-,115	,313*	-,228	,291*	,088	,313*	-,126	,426**	,046	-,266*	,246	-,010	
	Sig. (2-tailed)	,101	,769	,340		,129	,001	,362	,011	,383	,015	,082	,024	,510	,015	,344	,001	,730	,044	,058	,939	
	N	59	59	60	61	60	60	59	59	60	60	59	60	58	60	59	58	59	58	60	61	
Mainly I give seminars because it is part of my professional duties	Pearson Correlation	-,134	-,112	,082	-,198	1	,055	-,106	,033	-,115	-,208	,299*	-,027	-,050	-,138	,017	-,218	,024	,288*	-,038	-,127	
	Sig. (2-tailed)	,311	,398	,531	,129		,677	,420	,805	,383	,111	,020	,841	,705	,293	,896	,101	,853	,027	,776	,330	
	N	59	59	61	60	61	60	60	59	60	60	60	60	59	60	60	58	60	59	60	61	
I like to interchange with seminar participants	Pearson Correlation	,034	-,113	,094	,427**	,055	1	,362**	-,059	-,231	,075	-,092	,307*	,036	,026	-,075	,122	,169	-,176	,450**	,164	
	Sig. (2-tailed)	,799	,399	,475	,001	,677		,005	,661	,078	,574	,488	,018	,788	,847	,573	,365	,201	,186	,000	,210	
	N	58	58	60	60	60	60	59	58	59	59	59	59	58	59	59	57	59	58	59	60	
I like to develop professionally	Pearson Correlation	-,014	-,025	,226	,121	-,106	,362**	1	,043	-,139	,163	-,141	,160	-,033	,119	,487**	,459**	,216	-,189	,378**	,178	
	Sig. (2-tailed)	,918	,852	,082	,362	,420	,005		,749	,293	,219	,286	,227	,807	,371	,000	,000	,101	,154	,003	,173	
	N	58	58	60	59	60	59	60	58	59	59	59	59	58	59	59	57	59	58	59	60	
Please estimate your expertise as a learning facilitator	Pearson Correlation	-,172	-,425**	-,177	-,329*	,033	-,059	,043	1	,298*	-,112	,119	,061	,100	,024	-,054	-,219	,005	,172	,057	-,019	
	Sig. (2-tailed)	,196	,001	,181	,011	,805	,661	,749		,022	,396	,373	,648	,459	,854	,688	,102	,972	,200	,666	,885	
	N	58	58	59	59	59	58	58	60	59	59	58	59	57	59	58	57	58	57	59	60	
How long have you been working as a learning facilitator	Pearson Correlation	-,075	-,114	,012	-,115	-,115	-,231	-,139	,298*	1	-,219	-,064	-,217	,135	-,032	-,046	-,260*	,110	-,064	-,209	,088	
	Sig. (2-tailed)	,573	,390	,930	,383	,383	,078	,293	,022		,092	,628	,096	,311	,808	,730	,049	,409	,636	,110	,498	
	N	59	59	60	60	60	59	59	59	61	60	59	60	58	60	59	58	59	58	60	61	
Interested in the topic	Pearson Correlation	,242	,171	-,018	,313*	-,208	,075	,163	-,112	-,219	1	-,241	,511**	-,061	,795**	,112	,530**	,091	-,340**	,292*	-,110	
	Sig. (2-tailed)	,065	,196	,889	,015	,111	,574	,219	,396	,092		,064	,000	,649	,000	,397	,000	,494	,009	,024	,398	
	N	59	59	60	60	60	59	59	59	60	61	60	61	59	61	59	58	59	58	60	61	
Requirement of the employer	Pearson Correlation	-,101	-,057	,041	-,228	,299*	-,092	-,141	,119	-,064	-,241	1	-,006	,197	-,257*	,011	-,177	,256	,543**	-,004	-,327*	
	Sig. (2-tailed)	,452	,669	,754	,082	,020	,488	,286	,373	,628	,064		,964	,134	,048	,936	,189	,051	,000	,973	,011	
	N	58	58	60	59	60	59	59	58	59	60	60	60	59	60	59	57	59	58	59	60	
Exchange with other participants	Pearson Correlation	,266*	,061	-,086	,291*	-,027	,307*	,160	,061	-,217	,511**	-,006	1	,294*	,473**	-,027	,248	,274*	-,068	,674**	-,248	
	Sig. (2-tailed)	,042	,646	,513	,024	,841	,018	,227	,648	,096	,000	,964		,024	,000	,839	,061	,036	,614	,000	,054	
	N	59	59	60	60	60	59	59	59	60	61	60	61	59	61	59	58	59	58	60	61	

Principal Component Analysis

Principal Component Analysis: Variable Elimination: Inter Item correlation matrix

Correlation Matrix

		I like to impart subject knowledge (motivation to give seminars)	I like to facilitate learning processes (motivation to give seminars)	Mainly I give seminars because it is part of my professional duties	I like to interchange with seminar participants (motivation to give seminars)	I like to develop professionally (motivation to give seminars	Motivation for BT: Interested in the topic	Motivation for BT: Requirement of the employer	Motivation for BT: Exchange with other participants	Motivation for BT: To receive a certificate	Motivation for BT: Get to know new training methods	Motivation CPD:To expand my subject matter knowledge	Motivation CPD: Get to know didactic innovations	Motivation CPD: Open career options	Motivation CPD: Requirement of the employer	Motivation CPD: Exchange with other participants	I am very convinced of learning facilitation	My attitude in trainings has changed a lot	learning facilitation	Enabeling didactics	Constructivism	KoSiG (Competence Education in Occupational Health and Safety)	Generally, my seminars have changed a lot	Before the first seminar on learning facilitation (basic qualification) my attitude towards learning facilitation was positive	After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	Today, my attitude toward learning facilitation is positive
Correlation	I like to impart subject knowledge (motivation to give seminars)	1,000	,170	,199	-,011	,168	-,020	,159	-,044	-,096	,135	,524	,018	,300	,026	-,096	-,156	-,160	-,019	-,122	-,186	-,097	,057	-,254	-,076	-,210
	I like to facilitate learning processes (motivation to give seminars)	,170	1,000	-,146	,490	,171	-,040	-,190	,164	,031	-,009	-,117	-,011	,120	-,179	,101	-,293	-,258	,305	,160	,217	,357	,082	-,269	-,100	-,264
	Mainly I give seminars because it is part of my professional duties	,199	-,146	1,000	,041	-,110	-,131	,324	,117	,037	-,218	,087	-,192	,216	,356	-,036	-,029	-,194	-,013	-,209	-,094	-,233	-,126	,018	,058	-,010
	I like to interchange with seminar participants (motivation to give seminars)	-,011	,490	,041	1,000	,415	-,043	-,142	,474	,113	-,071	-,330	-,089	,167	-,220	,444	-,113	-,031	,187	,134	,247	,318	,038	-,200	-,203	-,303
	I like to develop professionally (motivation to give seminars	,168	,171	-,110	,415	1,000	,154	,056	,543	,059	,120	,091	,150	,188	,012	,457	,116	-,075	-,162	,111	,297	,446	-,064	,084	-,187	-,251
	Motivation for BT: Interested in the topic	-,020	-,040	-,131	-,043	,154	1,000	-,128	,209	-,116	,775	-,105	,317	,000	-,162	,014	,259	,160	,187	,300	,259	,214	,282	,284	,346	,464
	Motivation for BT: Requirement of the employer	,159	-,190	,324	-,142	,056	-,128	1,000	,057	,159	-,131	,254	,130	,415	,494	,059	-,181	,012	-,180	-,108	-,033	-,161	-,118	,024	-,417	-,191
	Motivation for BT:Exchange with other participants	-,044	,164	,117	,474	,543	,209	,057	1,000	,265	,091	-,107	,114	,285	,067	,651	,116	-,170	-,065	,263	,496	,284	-,140	,044	-,056	-,075
	Motivation for BT:To receive a certificate	-,096	,031	,037	,113	,059	-,116	,159	,265	1,000	-,219	,142	-,191	,138	,175	,271	-,029	,046	,026	,070	,063	-,045	-,025	,053	,016	-,113
	Motivation for BT:Get to know new training methods	,135	-,009	-,218	-,071	,120	,775	-,131	,091	-,219	1,000	-,051	,573	,150	-,236	-,170	-,028	,281	,115	,197	,150	,132	,334	,067	,213	,286
	Motivation CPD:To expand my subject matter knowledge	,524	-,117	,087	-,330	,091	-,105	,254	-,107	,142	-,051	1,000	,091	,309	,132	-,130	-,141	-,310	-,015	-,039	-,113	-,292	-,237	-,085	-,058	-,078
	Motivation CPD:Get to know didactic innovations	,018	-,011	-,192	-,089	,150	,317	,130	,114	-,191	,573	,091	1,000	,188	,012	,055	-,036	,095	,144	,381	,297	,259	,177	-,119	,116	,206
	Motivation CPD: Open career options	,300	,120	,216	,167	,188	,000	,415	,285	,138	,150	,309	,188	1,000	,374	,134	-,050	-,170	,102	,179	,183	-,031	-,080	,067	-,100	,051
	Motivation CPD:Requirement of the employer	,026	-,179	,356	-,220	,012	-,162	,494	,067	,175	-,236	,132	,012	,374	1,000	,031	,140	-,309	-,290	-,059	,132	-,083	-,179	,029	,031	,078
	Motivation CPD: Exchange with other participants	-,096	,101	-,036	,444	,457	,014	,059	,651	,271	-,170	-,130	,055	,134	,031	1,000	,051	-,377	-,204	,098	,254	,297	-,365	-,023	-,093	-,148
	I am very convinced of learning facilitation	-,156	-,293	-,029	-,113	,116	,259	-,181	,116	-,029	-,028	-,141	-,036	-,050	,140	,051	1,000	,071	-,043	-,006	,109	,169	,272	,212	,596	,746
	My attitude in trainings has changed a lot	-,160	-,258	-,194	-,031	-,075	,160	,012	-,170	,046	,281	-,310	,095	-,170	-,309	-,377	,071	1,000	,035	-,008	-,221	,128	,576	,146	-,066	,065

Correlation Matrix

	I like to impart subject knowledge (motivation to give seminars)	I like to facilitate learning processes (motivation to give seminars)	Mainly I give seminars because it is part of my professional duties	I like to interchange with seminar participants (motivation to give seminars)	I like to develop professionally (motivation to give seminars	Motivation for BT: Interested in the topic	Motivation for BT: Requirement of the employer	Motivation for BT: Exchange with other participants	Motivation for BT: To receive a certificate	Motivation for BT: Get to know new training methods	Motivation CPD:To expand my subject matter knowledge	Motivation CPD: Get to know didactic innovations	Motivation CPD: Open career options	Motivation CPD: Requirement of the employer	Motivation CPD: Exchange with other participants	I am very convinced of learning facilitation	My attitude in trainings has changed a lot	learning facilitation	Enabeling didactics	Constructivism	KoSiG (Competence Education in Occupational Health and Safety)	Generally, my seminars have changed a lot	Before the first seminar on learning facilitation (basic qualification) my attitude towards learning facilitation was positive	After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	Today, my attitude toward learning facilitation is positive
learning facilitation	-,019	,305	-,013	,187	-,162	,187	-,180	-,065	,026	,115	-,015	,144	,102	-,290	-,204	-,043	,035	1,000	,754	,391	,125	,264	,238	,120	,188
Enabeling didactics	-,122	,160	-,209	,134	,111	,300	-,108	,263	,070	,197	-,039	,381	,179	-,059	,098	-,006	-,008	,754	1,000	,642	,219	,125	,413	-,006	,136
Constructivism	-,186	,217	-,094	,247	,297	,259	-,033	,496	,063	,150	-,113	,297	,183	,132	,254	,109	-,221	,391	,642	1,000	,467	,014	,246	-,067	,146
KoSiG (Competence Education in Occupational Health and Safety)	-,097	,357	-,233	,318	,446	,214	-,161	,284	-,045	,132	-,292	,259	-,031	-,083	,297	,169	,128	,125	,219	,467	1,000	,367	-,036	-,081	,109
Generally, my seminars have changed a lot	,057	,082	-,126	,038	-,064	,282	-,118	-,140	-,025	,334	-,237	,177	-,080	-,179	-,365	,272	,576	,264	,125	,014	,367	1,000	,051	,208	,365
Before the first seminar on learning facilitation (basic qualification) my attitude towards learning facilitation was positive	-,254	-,269	,018	-,200	,084	,284	,024	,044	,053	,067	-,085	-,119	,067	,029	-,023	,212	,146	,238	,413	,246	-,036	,051	1,000	-,005	,211
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	-,076	-,100	,058	-,203	-,187	,346	-,417	-,056	,016	,213	-,058	,116	-,100	,031	-,093	,596	-,066	,120	-,006	-,067	-,081	,208	-,005	1,000	,664
Today, my attitude toward learning facilitation is positive	-,210	-,264	-,010	-,303	-,251	,464	-,191	-,075	-,113	,286	-,078	,206	,051	,078	-,148	,746	,065	,188	,136	,146	,109	,365	,211	,664	1,000

Principal Component Analysis: Five-Factor Solution

KMO and Bartlett's Test

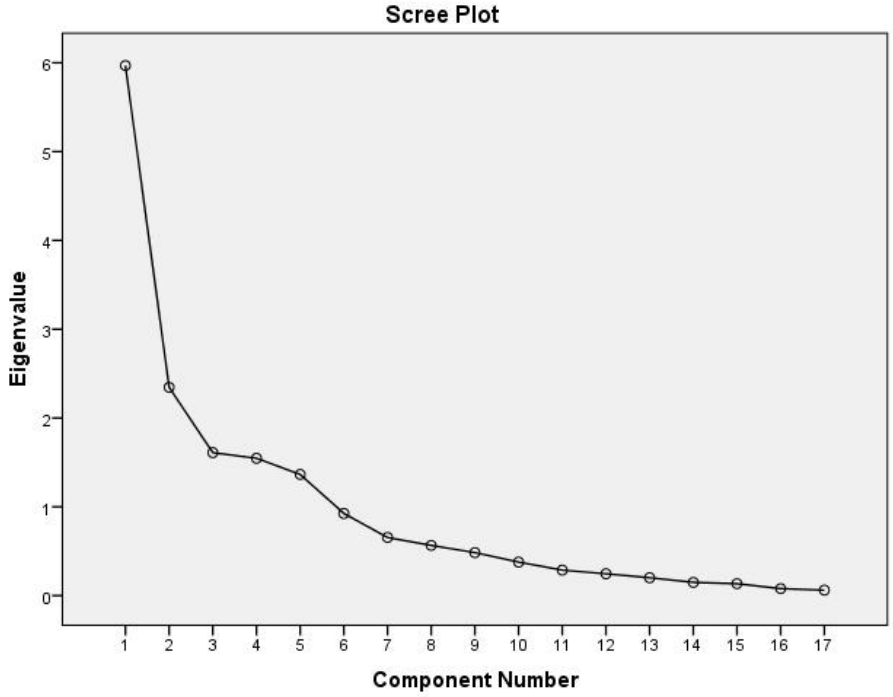
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,700
Bartlett's Test of Sphericity	Approx. Chi-Square	489,844
	df	136
	Sig.	,000

Communalities

	Initial	Extraction
I like to impart subject knowledge (motivation to give seminars)	1,000	,802
I like to interchange with seminar participants (motivation to give seminars)	1,000	,707
Motivation for BT: Interested in the topic	1,000	,674
Motivation for BT:Requirement of the employer	1,000	,757
Motivation for BT:Exchange with other participants	1,000	,792
Motivation for BT:Get to know new training methods	1,000	,623
Motivation CPD:To expand my subject matter knowledge	1,000	,687
Motivation CPD:Get to know didactic innovations	1,000	,664
Motivation CPD:Requirement of the employer	1,000	,762
Motivation CPD: Exchange with other participants	1,000	,770
I am very convinced of learning facilitation	1,000	,767
learning facilitation	1,000	,783
Enabling didactics	1,000	,827
Constructivism	1,000	,679
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	1,000	,858
Today, my attitude toward learning facilitation is positive	1,000	,848
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	1,000	,834

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	5,969	35,110	35,110	5,969	35,110	35,110	5,264
2	2,346	13,798	48,908	2,346	13,798	48,908	4,138
3	1,610	9,468	58,376	1,610	9,468	58,376	2,495
4	1,546	9,096	67,473	1,546	9,096	67,473	2,121
5	1,365	8,028	75,500	1,365	8,028	75,500	1,775
6	,925	5,440	80,940				
7	,655	3,852	84,792				
8	,565	3,326	88,118				
9	,484	2,847	90,964				
10	,377	2,218	93,183				
11	,287	1,690	94,873				
12	,246	1,449	96,323				
13	,201	1,182	97,505				
14	,149	,878	98,383				
15	,135	,793	99,176				
16	,079	,462	99,638				
17	,062	,362	100,000				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Component Number

Component Matrix[a]

	Component				
	1	2	3	4	5
Today, my attitude toward learning facilitation is positive	,819	-,377			
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	,803	-,415			
Motivation for BT: Interested in the topic	,800				
Motivation CPD:Get to know didactic innovations	,777				
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	,765	-,389			
I am very convinced of learning facilitation	,753				
Motivation for BT:Get to know new training methods	,734				
Enabling didactics	,641	,416		-,454	
learning facilitation	,630			-,560	
Motivation for BT:Exchange with other participants	,370	,708		,390	
Constructivism	,463	,586			
I like to impart subject knowledge (motivation to give seminars)			,872		
Motivation CPD:To expand my subject matter knowledge			,753		
Motivation CPD: Exchange with other participants		,509		,545	
I like to interchange with seminar participants (motivation to give seminars)		,512			-,622
Motivation CPD:Requirement of the employer	-,434			,425	,608
Motivation for BT:Requirement of the employer	-,475				,568

Extraction Method: Principal Component Analysis.

Pattern Matrix[a]

	Component				
	1	2	3	4	5
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	,973				
I am very convinced of learning facilitation	,918				
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	,913				
Today, my attitude toward learning facilitation is positive	,900				
Motivation for BT: Interested in the topic	,576	,364			
Motivation CPD:Get to know didactic innovations	,507	,374			
Enabling didactics		,943			
learning facilitation		,886			
Constructivism		,811			
Motivation for BT:Get to know new training methods	,378	,429			
Motivation CPD: Exchange with other participants			,884		
I like to interchange with seminar participants (motivation to give seminars)			,796	-,421	
Motivation for BT:Exchange with other participants			,732		
Motivation CPD:Requirement of the employer				,834	
Motivation for BT:Requirement of the employer				,778	
I like to impart subject knowledge (motivation to give seminars)					,903
Motivation CPD:To expand my subject matter knowledge					,816

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

Principal Component Analysis: Six-Factor Solution

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,700
Bartlett's Test of Sphericity	Approx. Chi-Square	489,844
	df	136
	Sig.	,000

Communalities

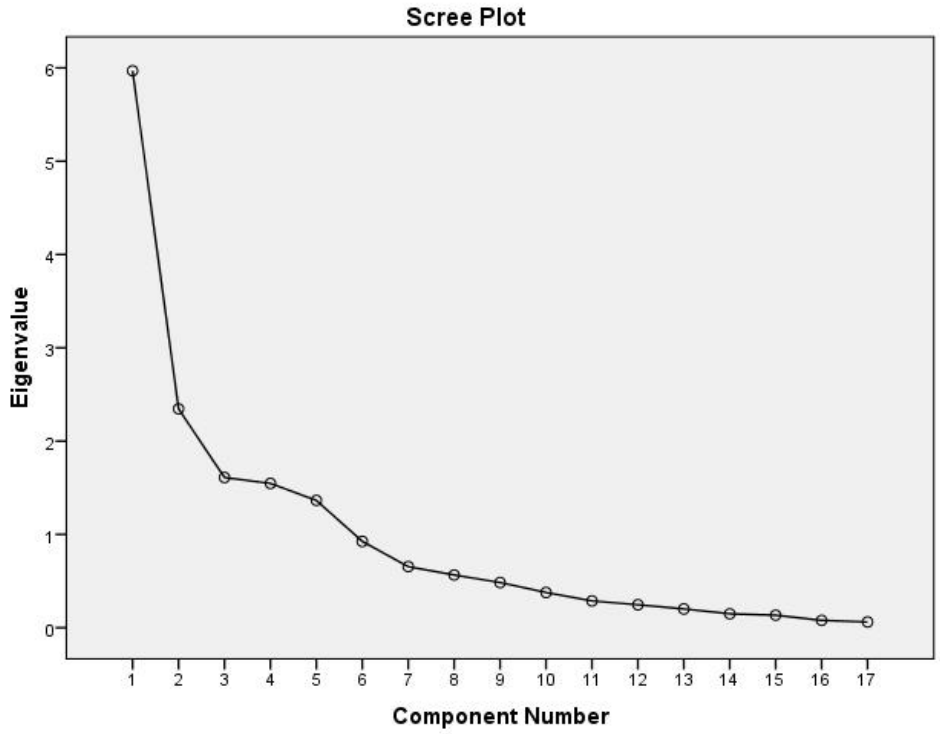
	Initial
I like to impart subject knowledge (motivation to give seminars)	1,000
I like to interchange with seminar participants (motivation to give seminars)	1,000
Motivation for BT: Interested in the topic	1,000
Motivation for BT:Requirement of the employer	1,000
Motivation for BT:Exchange with other participants	1,000
Motivation for BT:Get to know new training methods	1,000
Motivation CPD:To expand my subject matter knowledge	1,000
Motivation CPD:Get to know didactic innovations	1,000
Motivation CPD:Requirement of the employer	1,000
Motivation CPD: Exchange with other participants	1,000
I am very convinced of learning facilitation	1,000
learning facilitation	1,000
Enabling didactics	1,000
Constructivism	1,000
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	1,000
Today, my attitude toward learning facilitation is positive	1,000
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	1,000

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total
1	5,969	35,110	35,110	4,756
2	2,346	13,798	48,908	3,578
3	1,610	9,468	58,376	2,356
4	1,546	9,096	67,473	3,959
5	1,365	8,028	75,500	2,201
6	,925	5,440	80,940	1,636
7	,655	3,852	84,792	
8	,565	3,326	88,118	
9	,484	2,847	90,964	
10	,377	2,218	93,183	
11	,287	1,690	94,873	
12	,246	1,449	96,323	
13	,201	1,182	97,505	
14	,149	,878	98,383	
15	,135	,793	99,176	
16	,079	,462	99,638	
17	,062	,362	100,000	

Extraction Method: Principal Component Analysis.
a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.



Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
I am very convinced of learning facilitation	,921					
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	,880					
Today, my attitude toward learning facilitation is positive	,860					
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	,824					
Enabling didactics		,931				
Constructivism		,819				
learning facilitation		,794				
Motivation CPD: Exchange with other participants			,906			
I like to interchange with seminar participants (motivation to give seminars)			,751		-,432	
Motivation for BT:Exchange with other participants			,723			
Motivation for BT:Get to know new training methods				,927		
Motivation for BT: Interested in the topic				,734		
Motivation CPD:Get to know didactic innovations				,525		
Motivation CPD:Requirement of the employer					,845	
Motivation for BT:Requirement of the employer	-,380				,769	
Motivation CPD:To expand my subject matter knowledge						,912
I like to impart subject knowledge (motivation to give seminars)						,822

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

Structure Matrix

	Component					
	1	2	3	4	5	6
Today, my attitude toward learning facilitation is positive	,924	,387		,465		
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	,920			,448	-,375	
I am very convinced of learning facilitation	,890			,372		
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	,879			,541		
Enabling didactics		,940		,436		
learning facilitation		,836		,494	-,376	
Constructivism		,813	,374			
Motivation CPD: Exchange with other participants			,871			
Motivation for BT:Exchange with other participants		,412	,822			
I like to interchange with seminar participants (motivation to give seminars)			,713			
Motivation for BT:Get to know new training methods	,435	,427		,940		
Motivation for BT: Interested in the topic	,601	,466		,855		
Motivation CPD:Get to know didactic innovations	,600	,502		,750		
Motivation CPD:Requirement of the employer					,866	
Motivation for BT:Requirement of the employer	-,476				,810	
Motivation CPD:To expand my subject matter knowledge						,886
I like to impart subject knowledge (motivation to give seminars)						,842

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

Component Correlation Matrix

Component	1	2	3	4	5	6
1	1,000	,330	,064	,441	-,249	,029
2	,330	1,000	,239	,450	-,150	-,065
3	,064	,239	1,000	,260	,027	-,093
4	,441	,450	,260	1,000	-,213	,093
5	-,249	-,150	,027	-,213	1,000	-,072
6	,029	-,065	-,093	,093	-,072	1,000

Extraction Method: PCA.Rotation Method: Promax with Kaiser Normalization.

Component Score Coefficient Matrix

	Component					
	1	2	3	4	5	6
I like to impart subject knowledge (motivation to give seminars)	-,064	-,082	,064	,160	-,020	,513
I like to interchange with seminar participants (motivation to give seminars)	-,105	-,066	,371	,050	-,258	,007
Motivation for BT: Interested in the topic	,041	,004	,004	,350	,036	-,077
Motivation for BT:Requirement of the employer	-,100	-,002	-,001	,140	,449	,017
Motivation for BT:Exchange with other participants	,001	,080	,365	,061	,166	-,093
Motivation for BT:Get to know new training methods	-,049	-,024	-,002	,462	-,021	,015
Motivation CPD:To expand my subject matter knowledge	,055	,071	-,054	-,138	,018	,574
Motivation CPD:Get to know didactic innovations	,063	,065	-,004	,238	,014	,080
Motivation CPD:Requirement of the employer	,064	,002	,019	-,093	,514	-,010
Motivation CPD: Exchange with other participants	,064	-,014	,446	-,070	,054	,055
I am very convinced of learning facilitation	,273	,025	,064	-,085	,074	-,017
learning facilitation	-,023	,330	-,079	,054	-,128	,048
Enabling didactics	,013	,397	-,019	-,025	-,016	,008
Constructivism	,001	,353	,081	-,031	,121	-,049
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	,248	-,015	,000	-,031	-,066	,062
Today, my attitude toward learning facilitation is positive	,249	,052	-,059	-,026	-,007	,004
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	,221	-,082	-,016	,100	,016	-,055

Extraction Method: PCA. Rotation Method: Promax with Kaiser Normalization.

Component Score Covariance Matrix

Component	1	2	3	4	5	6
1	1,381	1,033	2,106	1,131	,943	2,388
2	1,033	1,302	1,077	,804	2,053	1,141
3	2,106	1,077	3,053	1,525	2,163	2,860
4	1,131	,804	1,525	1,407	,786	1,437
5	,943	2,053	2,163	,786	4,306	1,781
6	2,388	1,141	2,860	1,437	1,781	4,165

Principal Components Analysis: Cronbach's Alpha Reliability

Scale: Attitude

Case Processing Summary

		N	%
Cases	Valid	56	90,3
	Excluded[a]	6	9,7
	Total	62	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,916	,917	4

Item Statistics

	Mean	Std. Deviation	N
I am very convinced of learning facilitation	1,5714	,68376	56
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	1,6786	,81144	56
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	1,7143	,77961	56
Today, my attitude toward learning facilitation is positive	1,6071	,80178	56

Inter-Item Correlation Matrix

	I am very convinced of learning facilitation	After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	Today, my attitude toward learning facilitation is positive
I am very convinced of learning facilitation	1,000	,698	,687	,749
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	,698	1,000	,743	,725
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	,687	,743	1,000	,806
Today, my attitude toward learning facilitation is positive	,749	,725	,806	1,000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	1,643	1,571	1,714	,143	1,091	,004	4
Inter-Item Correlations	,735	,687	,806	,119	1,173	,002	4

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
6,5714	7,595	2,75587	4

Hotelling's T-Squared Test

Hotelling's T-Squared	F	df1	df2	Sig
4,339	1,394	3	53	,255

Scale: Knowledge

Case Processing Summary

		N	%
Cases	Valid	59	95,2
	Excluded[a]	3	4,8
	Total	62	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,816	,832	3

Item Statistics

	Mean	Std. Deviation	N
Enabling didactics	1,8814	,69691	59
Constructivism	2,3729	,84890	59
learning facilitation	1,8136	,62903	59

Inter-Item Correlation Matrix

	Enabling didactics	Constructivism	learning facilitation
Enabling didactics	1,000	,630	,814
Constructivism	,630	1,000	,423
learning facilitation	,814	,423	1,000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2,023	1,814	2,373	,559	1,308	,093	3
Inter-Item Correlations	,622	,423	,814	,391	1,924	,031	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Enabling didactics	4,1864	1,568	,836	,762	,576
Constructivism	3,6949	1,595	,558	,420	,895
learning facilitation	4,2542	1,951	,663	,676	,764

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
6,0678	3,513	1,87418	3

Hotelling's T-Squared Test

Hotelling's T-Squared	F	df1	df2	Sig
31,752	15,602	2	57	,000

Scale: Exchange

Case Processing Summary

		N	%
Cases	Valid	58	93,5
	Excluded[a]	4	6,5
	Total	62	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,713	,728	3

Item Statistics

	Mean	Std. Deviation	N
I like to interchange with seminar participants (motivation to give seminars)	1,3276	,50914	58
Motivation for BT:Exchange with other participants	1,6897	,90237	58
Motivation CPD: Exchange with other participants	1,6379	,66750	58

Inter-Item Correlation Matrix

	I like to interchange with seminar participants (motivation to give seminars)	Motivation for BT:Exchange with other participants	Motivation CPD: Exchange with other participants
I like to interchange with seminar participants (motivation to give seminars)	1,000	,302	,458
Motivation for BT:Exchange with other participants	,302	1,000	,655
Motivation CPD: Exchange with other participants	,458	,655	1,000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	1,552	1,328	1,690	,362	1,273	,038	3
Inter-Item Correlations	,472	,302	,655	,353	2,172	,025	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
I like to interchange with seminar participants (motivation to give seminars)	3,3276	2,049	,404	,210	,770
Motivation for BT:Exchange with other participants	2,9655	1,016	,586	,429	,613
Motivation CPD: Exchange with other participants	3,0172	1,351	,709	,504	,410

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
4,6552	2,897	1,70193	3

Hotelling's T-Squared Test

Hotelling's T-Squared	F	df1	df2	Sig
14,969	7,353	2	56	,001

Scale: New Methods

Case Processing Summary

		N	%
Cases	Valid	58	93,5
	Excluded[a]	4	6,5
	Total	62	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,824	,827	3

Item Statistics

	Mean	Std. Deviation	N
Motivation for BT: Interested in the topic	1,3276	,71052	58
Motivation CPD:Get to know didactic innovations	1,1897	,43757	58
Motivation for BT:Get to know new training methods	1,2414	,65722	58

Inter-Item Correlation Matrix

	Motivation for BT: Interested in the topic	Motivation CPD:Get to know didactic innovations	Motivation for BT:Get to know new training methods
Motivation for BT: Interested in the topic	1,000	,530	,805
Motivation CPD:Get to know didactic innovations	,530	1,000	,509
Motivation for BT:Get to know new training methods	,805	,509	1,000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	1,253	1,190	1,328	,138	1,116	,005	3
Inter-Item Correlations	,615	,509	,805	,295	1,580	,022	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Motivation for BT: Interested in the topic	2,4310	,916	,795	,667	,639
Motivation CPD:Get to know didactic innovations	2,5690	1,688	,547	,300	,890
Motivation for BT:Get to know new training methods	2,5172	1,026	,784	,657	,643

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
3,7586	2,502	1,58181	3

Hotelling's T-Squared Test

Hotelling's T-Squared	F	df1	df2	Sig
3,767	1,851	2	56	,167

Scale: Extrinsic_Requirement of Employer

Case Processing Summary

		N	%
Cases	Valid	58	93,5
	Excluded[a]	4	6,5
	Total	62	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,691	,704	2

Item Statistics

	Mean	Std. Deviation	N
Motivation for BT:Requirement of the employer	2,3621	1,25234	58
Motivation CPD:Requirement of the employer	2,8448	,98767	58

Inter-Item Correlation Matrix

	Motivation for BT:Requirement of the employer	Motivation CPD:Requirement of the employer
Motivation for BT:Requirement of the employer	1,000	,543
Motivation CPD:Requirement of the employer	,543	1,000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2,603	2,362	2,845	,483	1,204	,117	2
Inter-Item Correlations	,543	,543	,543	,000	1,000	,000	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Motivation for BT:Requirement of the employer	2,8448	,975	,543	,294	.
Motivation CPD:Requirement of the employer	2,3621	1,568	,543	,294	.

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
5,2069	3,886	1,97136	2

Hotelling's T-Squared Test

Hotelling's T-Squared	F	df1	df2	Sig
11,251	11,251	1	57	,001

Scale: Subject Matter

Case Processing Summary

		N	%
Cases	Valid	60	96,8
	Excluded[a]	2	3,2
	Total	62	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,685	,685	2

Item Statistics

	Mean	Std. Deviation	N
I like to impart subject knowledge (motivation to give seminars)	1,5000	,65094	60
Motivation CPD:To expand my subject matter knowledge	1,4667	,65008	60

Inter-Item Correlation Matrix

	I like to impart subject knowledge (motivation to give seminars)	Motivation CPD:To expand my subject matter knowledge
I like to impart subject knowledge (motivation to give seminars)	1,000	,521
Motivation CPD:To expand my subject matter knowledge	,521	1,000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	1,483	1,467	1,500	,033	1,023	,001	2
Inter-Item Correlations	,521	,521	,521	,000	1,000	,000	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted

I like to impart subject knowledge (motivation to give seminars)	1,4667	,423	,521	,271	.
Motivation CPD:To expand my subject matter knowledge	1,5000	,424	,521	,271	.

Scale Statistics

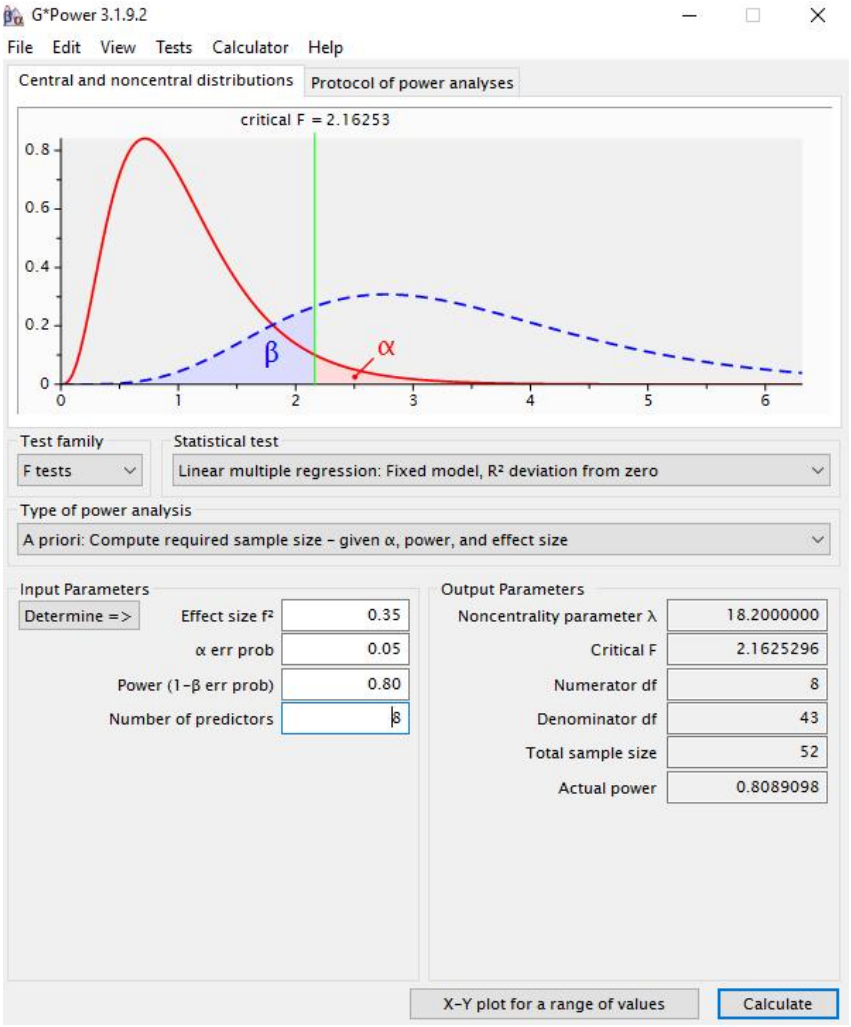
Mean	Variance	Std. Deviation	N of Items
2,9667	1,287	1,13446	2

Hotelling's T-Squared Test

Hotelling's T-Squared	F	df1	df2	Sig
,164	,164	1	59	,687

Multiple Regression

Power Analysis with 8 predictor variables – required sample size too large



Correlation to identify and reduce the number of input variables for the multiple regression analysis

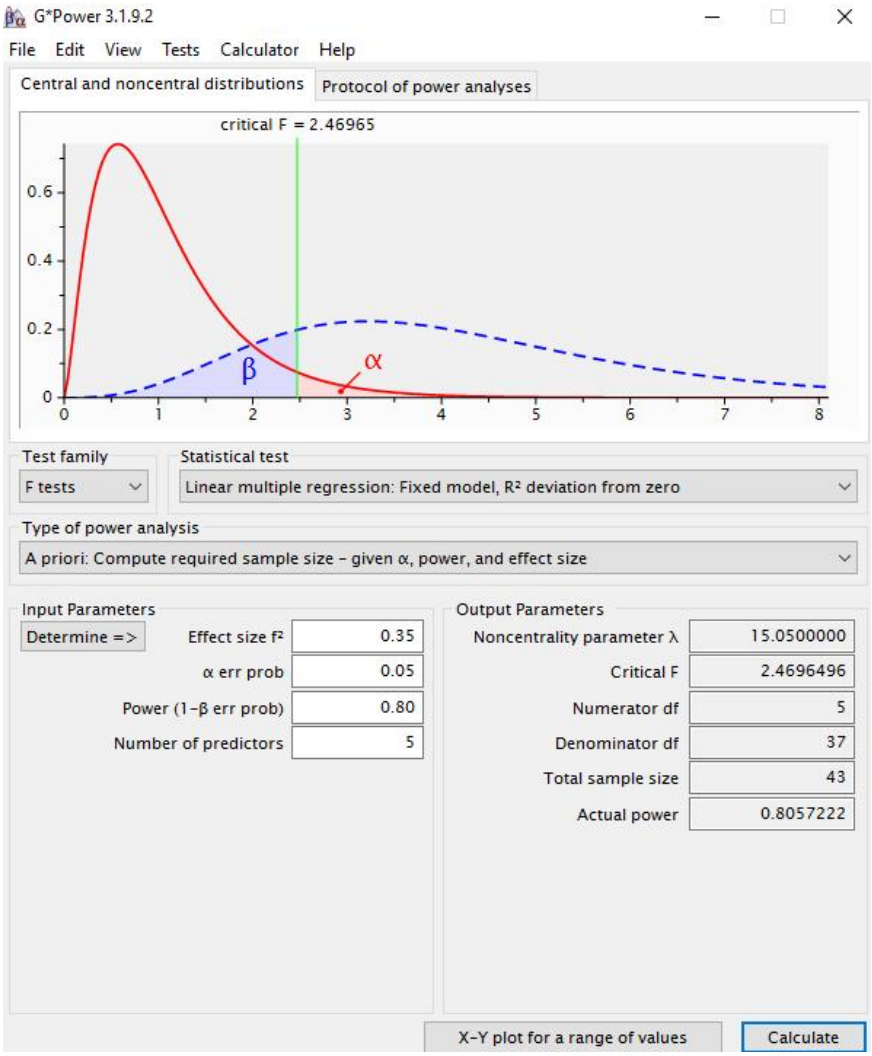
Correlations

		Gender	How old are you	F1_Attitude	F2_Knowledge	F3_Exchange	F4_NewMethods	F5_Extrinsic	F6_subjectmatter	Implementation
Gender	Pearson Correlation	1	-,263*	,065	,081	-,189	,058	-,051	,028	,251
	Sig. (2-tailed)		,044	,642	,549	,163	,671	,710	,837	,068
	N	60	59	54	57	56	56	56	58	54
How old are you	Pearson Correlation	-,263*	1	-,091	-,055	-,271*	-,174	,228	,164	**-,324***
	Sig. (2-tailed)	,044		,509	,681	,042	,195	,088	,216	,016
	N	59	61	55	58	57	57	57	59	55
F1_Attitude	Pearson Correlation	,065	-,091	1	,261	,166	,646**	-,414**	,083	**,677****
	Sig. (2-tailed)	,642	,509		,057	,239	,000	,002	,553	,000
	N	54	55	56	54	52	52	52	54	52
F2_Knowledge	Pearson Correlation	,081	-,055	,261	1	,328*	,442**	-,221	-,049	**,305***
	Sig. (2-tailed)	,549	,681	,057		,014	,001	,105	,718	,025
	N	57	58	54	59	55	55	55	57	54
F3_Exchange	Pearson Correlation	-,189	-,271*	,166	,328*	1	,373**	-,058	-,047	,206
	Sig. (2-tailed)	,163	,042	,239	,014		,005	,670	,729	,143
	N	56	57	52	55	58	56	57	58	52
F4_NewMethods	Pearson Correlation	,058	-,174	,646**	,442**	,373**	1	-,380**	,103	**,628****
	Sig. (2-tailed)	,671	,195	,000	,001	,005		,004	,447	,000
	N	56	57	52	55	56	58	56	57	52
F5_Extrinsic	Pearson Correlation	-,051	,228	-,414**	-,221	-,058	-,380**	1	,039	**-,485****
	Sig. (2-tailed)	,710	,088	,002	,105	,670	,004		,771	,000
	N	56	57	52	55	57	56	58	58	53
F6_subjectmatter	Pearson Correlation	,028	,164	,083	-,049	-,047	,103	,039	1	-,042
	Sig. (2-tailed)	,837	,216	,553	,718	,729	,447	,771		,762
	N	58	59	54	57	58	57	58	60	54
Implementation	Pearson Correlation	,251	-,324*	,677**	,305*	,206	,628**	-,485**	-,042	1
	Sig. (2-tailed)	,068	,016	,000	,025	,143	,000	,000	,762	
	N	54	55	52	54	52	52	53	54	56

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Power Analysis for the multiple regression analysis with 5 predictor variables – required sample size =43



[3] *-- Thursday, August 16, 2018 -- 16:22:10*

F tests – Linear multiple regression: Fixed model, R² deviation from zero

Analysis:	A priori: Compute required sample size		
Input:	Effect size f²	=	0.35
	α err prob	=	0.05
	Power (1–β err prob)	=	0.80
	Number of predictors	=	5
Output:	Noncentrality parameter λ	=	15.0500000
	Critical F	=	2.4696496
	Numerator df	=	5
	Denominator df	=	37
	Total sample size	=	43
	Actual power	=	0.8057222

Results of the Multiple Regression Analysis

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	F5_Extrinsic, F2_Knowledge, How old are you, F1_Attitude, F4_NewMethods[b]	.	Enter

a. Dependent Variable: Implementation
b. All requested variables entered.

a. Predictors: (Constant), F5_Extrinsic, F2_Knowledge, How old are you, F1_Attitude, F4_NewMethods
b. Dependent Variable: Implementation

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,773	,598	,545	1,19055	,598	11,292	5	38	,000	1,902

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	80,025	5	16,005	11,292	,000
	Residual	53,861	38	1,417		
	Total	133,886	43			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	5,211	1,243		4,194	,000	2,696	7,727		
	How old are you	-,479	,234	-,222	-2,043	,048	-,953	-,004	,896	1,116
	F1_Attitude	1,196	,334	,497	3,584	,001	,520	1,871	,550	1,819
	F2_Knowledge	,167	,317	,062	,527	,601	-,475	,809	,755	1,324
	F4_New Methods	,290	,499	,086	,581	,565	-,721	1,300	,478	2,093
	F5_Extrinsic	-,361	,205	-,203	-1,760	,087	-,777	,054	,797	1,255

Coefficient Correlations

Model			F5_Extrinsic	F2_Knowledge	How old are you	F1_Attitude	F4_NewMethods
1	Correlations	F5_Extrinsic	1,000	,063	-,222	,257	,028
		F2_Knowledge	,063	1,000	,022	,061	-,406
		How old are you	-,222	,022	1,000	-,029	,127
		F1_Attitude	,257	,061	-,029	1,000	-,562
		F4_NewMethods	,028	-,406	,127	-,562	1,000
	Covariances	F5_Extrinsic	,042	,004	-,011	,018	,003
		F2_Knowledge	,004	,101	,002	,006	-,064
		How old are you	-,011	,002	,055	-,002	,015
		F1_Attitude	,018	,006	-,002	,111	-,094
		F4_NewMethods	,003	-,064	,015	-,094	,249

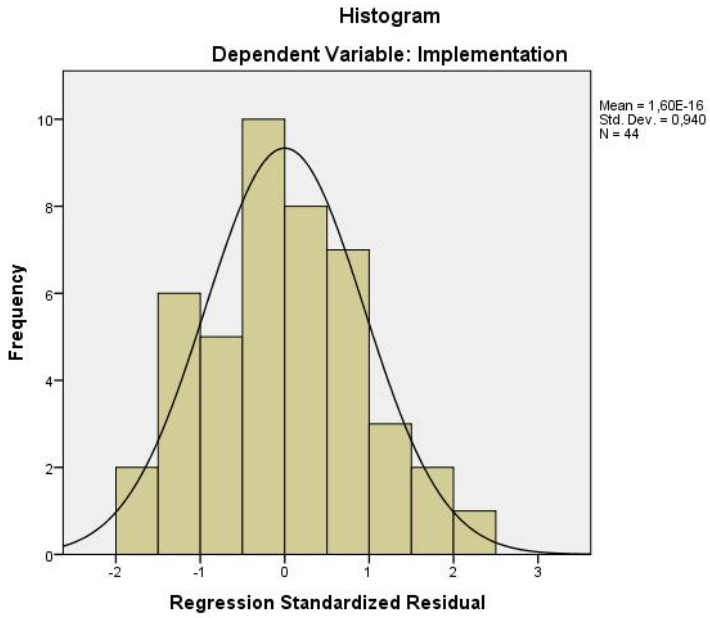
Collinearity Diagnostics

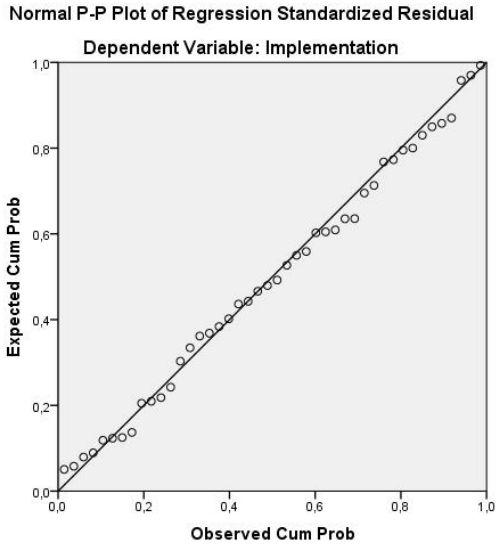
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions					
				(Constant)	How old are you	F1_Attitude	F2_Knowledge	F4_New Methods	F5_Extrinsic
1	1	5,533	1,000	,00	,00	,00	,00	,00	,00
	2	,268	4,547	,00	,02	,08	,01	,05	,15
	3	,082	8,212	,00	,02	,38	,52	,01	,01
	4	,061	9,535	,01	,28	,00	,04	,23	,59
	5	,041	11,637	,00	,18	,46	,30	,69	,11
	6	,016	18,500	,98	,50	,07	,13	,01	,14

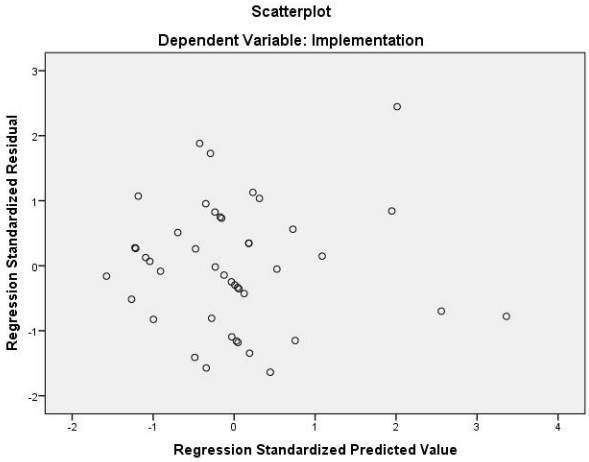
Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3,1912	9,9273	5,3409	1,36420	44
Residual	-1,94991	2,91265	,00000	1,11919	44
Std. Predicted Value	-1,576	3,362	,000	1,000	44
Std. Residual	-1,638	2,446	,000	,940	44

Charts


Histogram
Dependent Variable: Implementation
Mean = 1,60E-16
Std. Dev. = 0,940
N = 44
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Implementation
Expected Cum Prob
Observed Cum Prob


Scatterplot
Dependent Variable: Implementation
Regression Standardized Residual
Regression Standardized Predicted Value

Kruskal-Wallis Test

Analysis of the Differences between the different implementer types
Six PCA factors and implementation

Kruskal-Wallis Test

Ranks

	Implementers	N	Mean Rank
F1_Attitude	instrisic implementers	43	24,16
	extrinsic implementers	7	39,14
	non-implementers	6	47,17
	Total	56	
F2_Knowledge	instrisic implementers	44	30,24
	extrinsic implementers	7	21,57
	non-implementers	8	36,06
	Total	59	
F3_Exchange	instrisic implementers	43	28,95
	extrinsic implementers	7	28,36
	non-implementers	8	33,44
	Total	58	
F4_NewMethods	instrisic implementers	44	27,19
	extrinsic implementers	6	30,50
	non-implementers	8	41,44
	Total	58	
F5_Extrinsic	instrisic implementers	43	33,40
	extrinsic implementers	7	22,14
	non-implementers	8	15,00
	Total	58	
F6_subjectmatter	instrisic implementers	45	31,44
	extrinsic implementers	7	30,29
	non-implementers	8	25,38
	Total	60	
Implementation	instrisic implementers	42	25,77
	extrinsic implementers	6	25,42
	non-implementers	8	45,13
	Total	56	

Test Statistics[a,b]

	F1_Attitude	F2_Knowledge	F3_Exchange	F4_NewMethods	F5_Extrinsic	F6_subjectmatter	Implementation
Chi-Square	14,859	2,823	,552	7,234	9,828	,943	10,102
df	2	2	2	2	2	2	2
Asymp. Sig.	,001	,244	,759	,027	,007	,624	,006

a. Kruskal Wallis Test

b. Grouping Variable: Implementers

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
F1_Attitude	56	1,6429	,68897	1,00	4,00
F2_Knowledge	59	2,0226	,62473	1,00	4,00
F3_Exchange	58	1,5517	,56731	1,00	3,00
F4_NewMethods	58	1,2529	,52727	1,00	3,67
F5_Extrinsic	58	2,6034	,98568	1,00	4,00
F6_subjectmatter	60	1,4833	,56723	1,00	3,00
Implementation	56	5,4107	1,79673	3,00	11,00
Implementers	62	1,3710	,70673	1,00	3,00

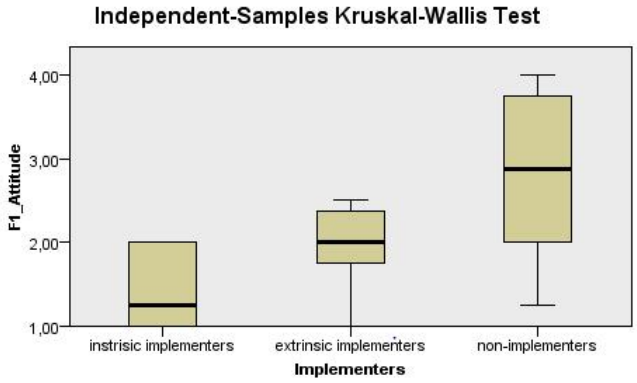
*Nonparametric Tests: Independent Samples.
NPTESTS/INDEPENDENT TEST (F1_Attitude F2_Knowledge F3_Exchange F4_NewMethods F5_Extrinsic F6_subjectmatter Implementation) GROUP (Implementers) KRUSKAL_WALLIS (COMPARE=PAIRWISE/MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE/CRITERIA ALPHA=0.05CILEVEL=95.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of F1_Attitude is the same across categories of Implementers.	Independent-Samples Kruskal-Wallis Test	,001	Reject the null hypothesis.
2	The distribution of F2_Knowledge is the same across categories of Implementers.	Independent-Samples Kruskal-Wallis Test	,244	Retain the null hypothesis.
3	The distribution of F3_Exchange is the same across categories of Implementers.	Independent-Samples Kruskal-Wallis Test	,759	Retain the null hypothesis.
4	The distribution of F4_NewMethods is the same across categories of Implementers.	Independent-Samples Kruskal-Wallis Test	,027	Reject the null hypothesis.
5	The distribution of F5_Extrinsic is the same across categories of Implementers.	Independent-Samples Kruskal-Wallis Test	,007	Reject the null hypothesis.
6	The distribution of F6_subjectmatter is the same across categories of Implementers.	Independent-Samples Kruskal-Wallis Test	,624	Retain the null hypothesis.
7	The distribution of Implementation is the same across categories of Implementers.	Independent-Samples Kruskal-Wallis Test	,006	Reject the null hypothesis.

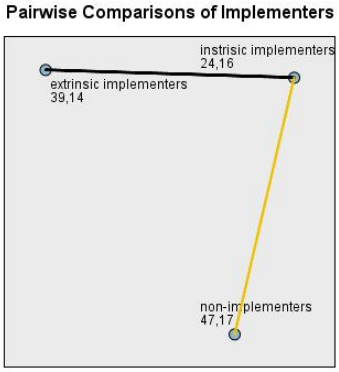
Asymptotic significances are displayed. The significance level is ,05.

F1_Attitude



Total N	56
Test Statistic	14,859
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	,001

1. The test statistic is adjusted for ties.

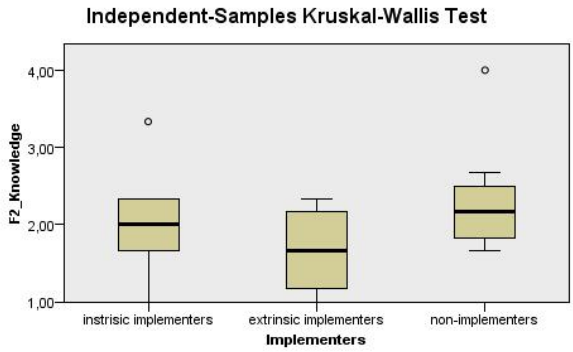


Each node shows the sample average rank of Implementers.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
instrisic implementers-extrinsic implementers	-14,980	6,425	-2,332	,020	,059
instrisic implementers-non-implementers	-23,004	6,870	-3,348	,001	,002
extrinsic implementers-non-implementers	-8,024	8,770	-,915	,360	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is ,05.

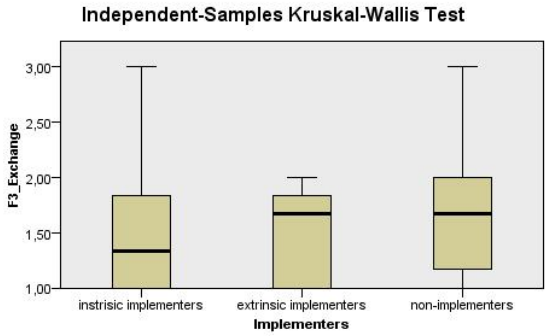
F2_Knowledge



Total N	59
Test Statistic	2,823
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	,244

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

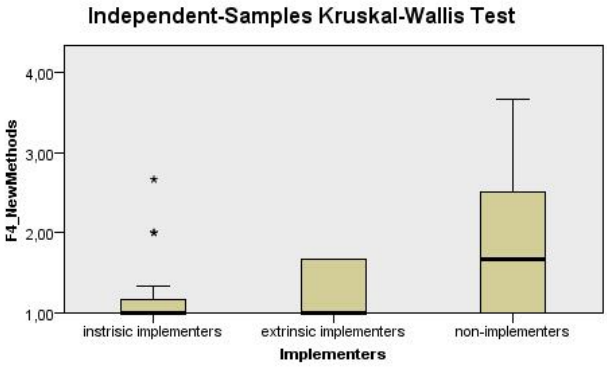
F3_Exchange



Total N	58
Test Statistic	,552
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	,759

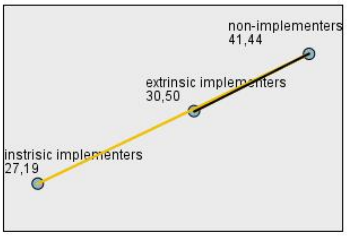
1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

F4_New Methods



Total N	58
Test Statistic	7,234
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	,027

1. The test statistic is adjusted for ties.

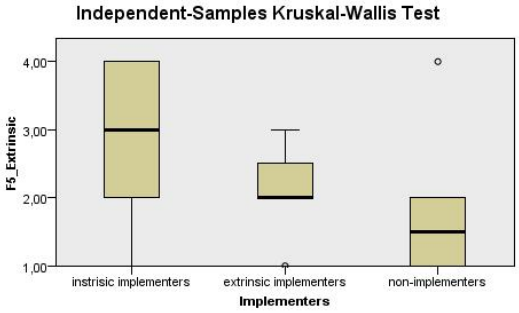


Each node shows the sample average rank of Implementers.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
instrisic implementers-extrinsic implementers	-3,307	6,011	-,550	,582	1,000
instrisic implementers-non-implementers	-14,244	5,309	-2,683	,007	,022
extrinsic implementers-non-implementers	-10,938	7,460	-1,466	,143	,428

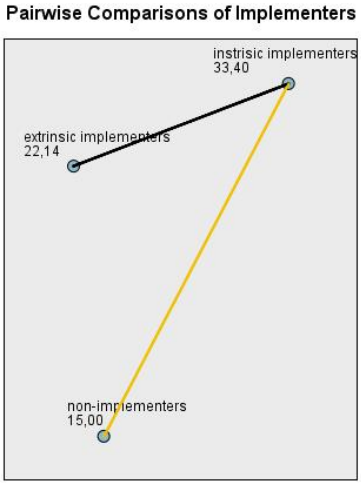
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is ,05.

F5_Extrinsic Motivation to develop professionally



Total N	58
Test Statistic	9,828
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	,007

1. The test statistic is adjusted for ties.

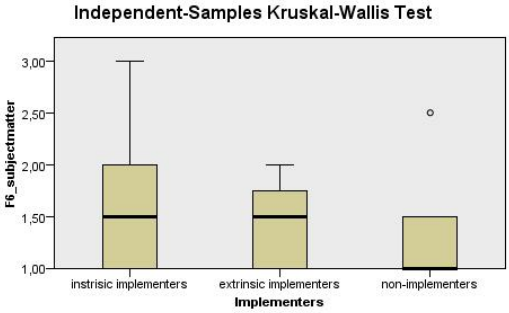


Each node shows the sample average rank of Implementers.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
non-implementers-extrinsic implementers	7,143	8,599	,831	,406	1,000
non-implementers-instrisic implementers	18,395	6,398	2,875	,004	,012
extrinsic implementers-instrisic implementers	11,252	6,772	1,662	,097	,290

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is ,05.

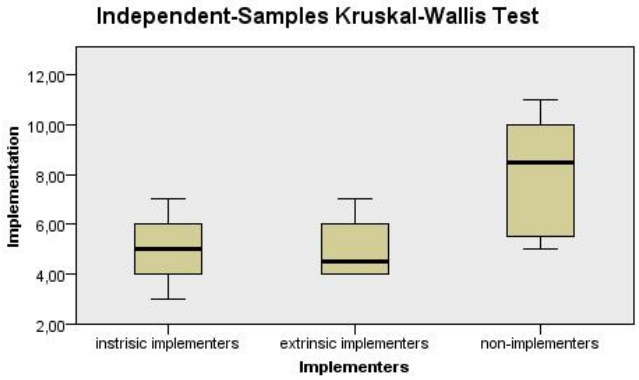
F6_Subject Matter



Total N	60
Test Statistic	,943
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	,624

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

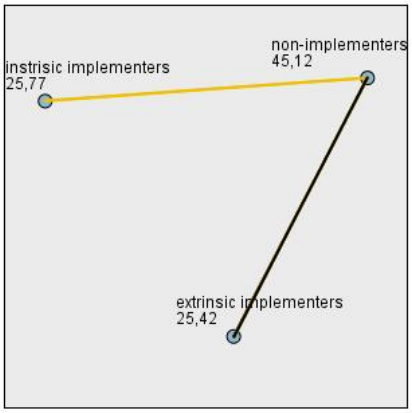
Implementation (joint variable)



Total N	56
Test Statistic	10,102
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	,006

1. The test statistic is adjusted for ties.

Pairwise Comparisons of Implementers



Each node shows the sample average rank of Implementers.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
extrinsic implementers-instrisic implementers	,357	6,975	,051	,959	1,000
extrinsic implementers-non-implementers	-19,708	8,631	-2,283	,022	,067
instrisic implementers-non-implementers	-19,351	6,165	-3,139	,002	,005

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is ,05.

Exploration of means and standard deviations of the three implementer types with respect to age
Explore: Intrinsic Implementers

[DataSet3] \\dd.hvbg.local\freigaben\nutzer\BoegeK\Desktop\Implementers.sav

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
How old are you	46	97,9%	1	2,1%	47	100,0%

Descriptives

			Statistic	Std. Error
How old are you	Mean		3,4565	,11508
	95% Confidence Interval for Mean	Lower Bound	3,2247	
		Upper Bound	3,6883	
	5% Trimmed Mean		3,4517	
	Median		3,5000	
	Variance		,609	
	Std. Deviation		,78050	
	Minimum		2,00	
	Maximum		5,00	
	Range		3,00	
	Interquartile Range		1,00	
	Skewness		-,143	,350
	Kurtosis		-,333	,688

Extreme Values

			Case Number	Value
How old are you	Highest	1	2	5,00
		2	29	5,00
		3	45	5,00
		4	7	4,00
		5	9	4,00[a]
	Lowest	1	32	2,00
		2	23	2,00
		3	22	2,00
		4	8	2,00
		5	3	2,00

a. Only a partial list of cases with the value 4,00 are shown in the table of upper extremes.

Explore: Extrinsic Implementers

Notes

[DataSet2] \\dd.hvbg.local\freigaben\Nutzer\BoegeK\Desktop\Neuer Ordner\SPSS Dateien\Implementers_Extrinsic.sav

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
How old are you	7	100,0%	0	0,0%	7	100,0%

Descriptives

			Statistic	Std. Error
How old are you	Mean		3,8571	,26082
	95% Confidence Interval for Mean	Lower Bound	3,2189	
		Upper Bound	4,4953	
	5% Trimmed Mean		3,8413	
	Median		4,0000	
	Variance		,476	
	Std. Deviation		,69007	
	Minimum		3,00	
	Maximum		5,00	
	Range		2,00	
	Interquartile Range		1,00	
	Skewness		,174	,794
	Kurtosis		,336	1,587

Extreme Values[a]

			Case Number	Value
How old are you	Highest	1	7	5,00
		2	2	4,00
		3	3	4,00[b]
	Lowest	1	4	3,00
		2	1	3,00
		3	6	4,00[c]

a. The requested number of extreme values exceeds the number of data points. A smaller number of extremes is displayed.
b. Only a partial list of cases with the value 4,00 are shown in the table of upper extremes.
c. Only a partial list of cases with the value 4,00 are shown in the table of lower extremes.

Explore: Non-implementers

[nonimplementers]

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
How old are you	8	100,0%	0	0,0%	8	100,0%

Descriptives

			Statistic	Std. Error
How old are you	Mean		2,7500	,25000
	95% Confidence Interval for Mean	Lower Bound	2,1588	
		Upper Bound	3,3412	
	5% Trimmed Mean		2,7222	
	Median		3,0000	
	Variance		,500	
	Std. Deviation		,70711	
	Minimum		2,00	
	Maximum		4,00	
	Range		2,00	
	Interquartile Range		1,00	
	Skewness		,404	,752
	Kurtosis		-,229	1,481

Extreme Values[a]

			Case Number	Value
How old are you	Highest	1	7	4,00
		2	1	3,00
		3	2	3,00
		4	3	3,00[b]
	Lowest	1	8	2,00
		2	6	2,00
		3	4	2,00
		4	5	3,00[c]

a. The requested number of extreme values exceeds the number of data points. A smaller number of extremes is displayed.

b. Only a partial list of cases with the value 3,00 are shown in the table of upper extremes.

c. Only a partial list of cases with the value 3,00 are shown in the table of lower extremes.

Kruskal-Wallis Test: Implementer type and age

NPar Tests to determine the ranks

Ranks

	Implementers	N	Mean Rank
How old are you	instrisic implementers	46	31,96
	extrinsic implementers	7	40,07
	non-implementers	8	17,56
	Total	61	

Test Statistics[a,b]

	How old are you
Chi-Square	7,540
df	2
Asymp. Sig.	,023

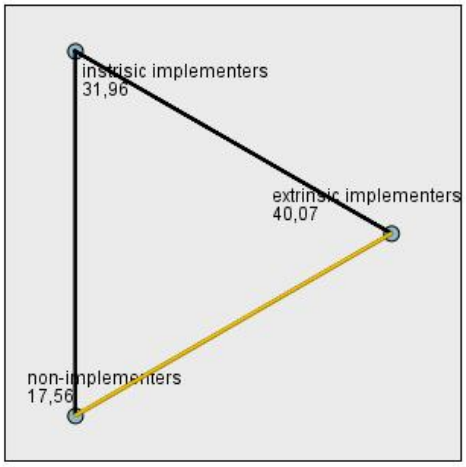
a. Kruskal Wallis Test
b. Grouping Variable: Implementers

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of How old are you is the same across categories of Implementers.	Independent-Samples Kruskal-Wallis Test	,023	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

Pairwise Comparisons of Implementers



Each node shows the sample average rank of Implementers.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
non-implementers-instrisic implementers	14,394	6,336	2,272	,023	,069
non-implementers-extrinsic implementers	22,509	8,560	2,630	,009	,026
instrisic implementers-extrinsic implementers	-8,115	6,710	-1,209	,227	,680

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is ,05.

Correlation between age and attitude

Descriptive Statistics

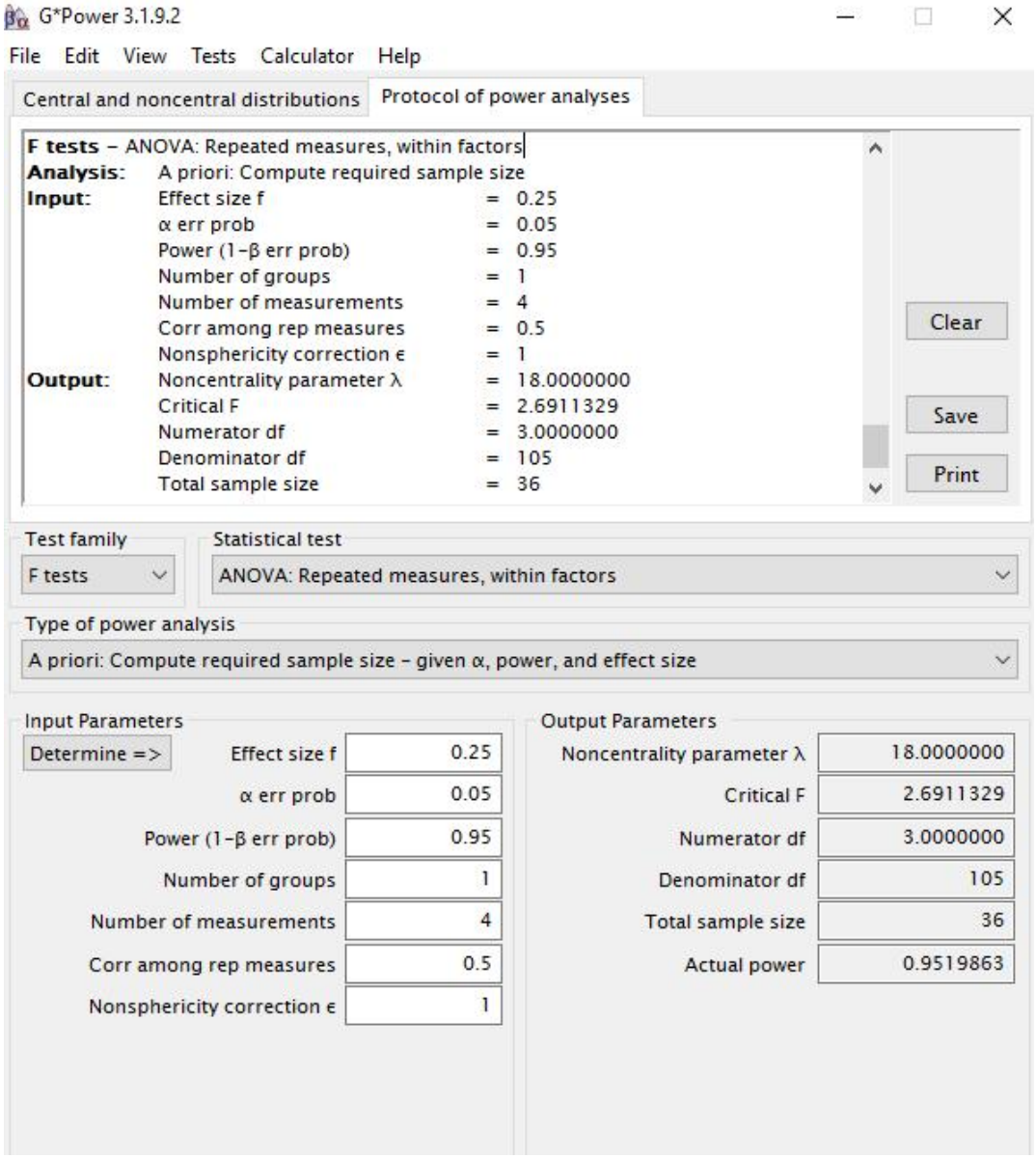
	Mean	Std. Deviation	N
How old are you	3,4098	,80368	61
F1_Attitude	1,6429	,68897	56

Correlations

		How old are you	F1_Attitude
How old are you	Pearson Correlation	1	-,091
	Sig. (2-tailed)		,509
	N	61	55
F1_Attitude	Pearson Correlation	-,091	1
	Sig. (2-tailed)	,509	
	N	55	56

Analysis of Variance
Attitude change over time within the group of intrinsic implementers

Power Analysis



Attitude Change: Analysis of Variance – within subjects repeated measures

Explore

Notes

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Before the first seminar on learning facilitation (basic qualification) my attitude towards learning facilitation was positive	43	91,5%	4	8,5%	47	100,0%
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	43	91,5%	4	8,5%	47	100,0%
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	43	91,5%	4	8,5%	47	100,0%
Today, my attitude toward learning facilitation is positive	43	91,5%	4	8,5%	47	100,0%

Descriptives

			Statistic	Std. Error
Before the first seminar on learning facilitation (basic qualification) my attitude towards learning facilitation was positive	Mean		1,7907	,13541
	95% Confidence Interval for Mean	Lower Bound	1,5174	
		Upper Bound	2,0640	
	5% Trimmed Mean		1,7158	
	Median		2,0000	
	Variance		,788	
	Std. Deviation		,88797	
	Minimum		1,00	
	Maximum		4,00	
	Range		3,00	
	Interquartile Range		1,00	
	Skewness		,863	,361
	Kurtosis		-,114	,709
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	Mean		1,4419	,10150
	95% Confidence Interval for Mean	Lower Bound	1,2370	
		Upper Bound	1,6467	
	5% Trimmed Mean		1,3798	
	Median		1,0000	
	Variance		,443	
	Std. Deviation		,66556	
	Minimum		1,00	
	Maximum		3,00	
	Range		2,00	
	Interquartile Range		1,00	
	Skewness		1,239	,361
	Kurtosis		,372	,709
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	Mean		1,4884	,09035
	95% Confidence Interval for Mean	Lower Bound	1,3060	
		Upper Bound	1,6707	
	5% Trimmed Mean		1,4354	
	Median		1,0000	
	Variance		,351	
	Std. Deviation		,59250	
	Minimum		1,00	
	Maximum		3,00	
	Range		2,00	
	Interquartile Range		1,00	
	Skewness		,767	,361
	Kurtosis		-,335	,709
Today, my attitude toward learning facilitation is positive	Mean		1,3256	,07231
	95% Confidence Interval for Mean	Lower Bound	1,1797	
		Upper Bound	1,4715	
	5% Trimmed Mean		1,3062	
	Median		1,0000	
	Variance		,225	
	Std. Deviation		,47414	
	Minimum		1,00	
	Maximum		2,00	
	Range		1,00	
	Interquartile Range		1,00	
	Skewness		,772	,361
	Kurtosis		-1,476	,709

Extreme Values

			Case Number	Value
Before the first seminar on learning facilitation (basic qualification) my attitude towards learning facilitation was positive	Highest	1	29	4,00
		2	35	4,00
		3	3	3,00
		4	9	3,00
		5	12	3,00[a]
	Lowest	1	47	1,00
		2	46	1,00
		3	45	1,00
		4	44	1,00
		5	43	1,00[b]
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	Highest	1	25	3,00
		2	28	3,00
		3	42	3,00
		4	45	3,00
		5	7	2,00[c]
	Lowest	1	46	1,00
		2	44	1,00
		3	43	1,00
		4	41	1,00
		5	38	1,00[b]
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	Highest	1	31	3,00
		2	36	3,00
		3	7	2,00
		4	9	2,00
		5	12	2,00[c]
	Lowest	1	46	1,00
		2	43	1,00
		3	41	1,00
		4	38	1,00
		5	37	1,00[b]
Today, my attitude toward learning facilitation is positive	Highest	1	7	2,00
		2	8	2,00
		3	9	2,00
		4	14	2,00
		5	19	2,00[c]
	Lowest	1	47	1,00
		2	46	1,00
		3	45	1,00
		4	44	1,00
		5	43	1,00[b]

a. Only a partial list of cases with the value 3,00 are shown in the table of upper extremes.
b. Only a partial list of cases with the value 1,00 are shown in the table of lower extremes.
c. Only a partial list of cases with the value 2,00 are shown in the table of upper extremes.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Before the first seminar on learning facilitation (basic qualification) my attitude towards learning facilitation was positive	,279	43	,000	,798	43	,000
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	,398	43	,000	,667	43	,000
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	,353	43	,000	,710	43	,000
Today, my attitude toward learning facilitation is positive	,428	43	,000	,591	43	,000

a. Lilliefors Significance Correction

General Linear Model

Within-Subjects Factors

Measure: MEASURE_1

time	Dependent Variable
1	Q_61322
2	Q_61325
3	Q_61328
4	Q_61331

Descriptive Statistics

	Mean	Std. Deviation	N
Before the first seminar on learning facilitation (basic qualification) my attitude towards learning facilitation was positive	1,7907	,88797	43
After the basic qualification for learning facilitators my attitude towards learning facilitation was positive	1,4419	,66556	43
After the first implementation trials in my seminars, my attitude towards learning facilitation was positive (if nothing could be implemented, 2 months after the training)	1,4884	,59250	43
Today, my attitude toward learning facilitation is positive	1,3256	,47414	43

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
time	Pillai's Trace	,243	4,282[b]	3,000	40,000	,010	,243
	Wilks' Lambda	,757	4,282[b]	3,000	40,000	,010	,243
	Hotelling's Trace	,321	4,282[b]	3,000	40,000	,010	,243
	Roy's Largest Root	,321	4,282[b]	3,000	40,000	,010	,243

a. Design: Intercept
Within Subjects Design: time
b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
time	,418	35,563	5	,000	,633	,662	,333

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.
a. Design: Intercept
Within Subjects Design: time

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Sphericity Assumed	5,070	3	1,690	5,078	,002	,108
	Greenhouse-Geisser	5,070	1,899	2,669	5,078	,009	,108
	Huynh-Feldt	5,070	1,987	2,552	5,078	,008	,108
	Lower-bound	5,070	1,000	5,070	5,078	,030	,108
Error(time)	Sphericity Assumed	41,930	126	,333			
	Greenhouse-Geisser	41,930	79,769	,526			
	Huynh-Feldt	41,930	83,441	,503			
	Lower-bound	41,930	42,000	,998			

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	time	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Linear	3,912	1	3,912	7,865	,008	,158
	Quadratic	,372	1	,372	1,147	,290	,027
	Cubic	,786	1	,786	4,453	,041	,096
Error(time)	Linear	20,888	42	,497			
	Quadratic	13,628	42	,324			
	Cubic	7,414	42	,177			

Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	393,023	1	393,023	485,832	,000	,920
Error	33,977	42	,809			

Estimated Marginal Means

Time

Estimates

Measure: MEASURE_1

time	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	1,791	,135	1,517	2,064
2	1,442	,101	1,237	1,647
3	1,488	,090	1,306	1,671
4	1,326	,072	1,180	1,471

Pairwise Comparisons

Measure: MEASURE_1

(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	,349	,148	,141	-,062	,760
	3	,302	,161	,409	-,145	,749
	4	,465*	,150	**,021**	,049	,881
2	1	-,349	,148	,141	-,760	,062
	3	-,047	,094	1,000	-,306	,213
	4	,116	,089	1,000	-,131	,364
3	1	-,302	,161	,409	-,749	,145
	2	,047	,094	1,000	-,213	,306
	4	,163	,074	,199	-,042	,367
4	1	-,465*	,150	,021	-,881	-,049
	2	-,116	,089	1,000	-,364	,131
	3	-,163	,074	,199	-,367	,042

Based on estimated marginal means

*. The mean difference is significant at the,05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Pillai's trace	,243	4,282[a]	3,000	40,000	,010	,243
Wilks' lambda	,757	4,282[a]	3,000	40,000	,010	,243
Hotelling's trace	,321	4,282[a]	3,000	40,000	,010	,243
Roy's largest root	,321	4,282[a]	3,000	40,000	,010	,243

Each F tests the multivariate effect of time. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Exact statistic

Attitude Change: T-Test to calculate Cohens d for the partial effect size between t1 and t4

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before the first seminar on learning facilitation (basic qualification) my attitude towards learning facilitation was positive	1,6905	42	,74860	,11551
	Today, my attitude toward learning facilitation is positive	1,3571	42	,48497	,07483

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Before the first seminar on learning facilitation (basic qualification) my attitude towards learning facilitation was positive & Today, my attitude toward learning facilitation is positive	42	,178	,261

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Before the first seminar on learning facilitation (basic qualification) my attitude towards learning facilitation was positive - Today, my attitude toward learning facilitation is positive	,33333	,81650	,12599	,07890	,58777	2,646	41	,012